BONNEVILLE (PACIFIC NORTHWEST)-CALIFORNIA INTERTIE

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HEARINGS

BEFORE THE

SUBCOMMITTEE ON IRRIGATION AND RECLAMATION

OF THE

COMMITTEE ON INTERIOR AND INSULAR AFFAIRS UNITED STATES SENATE

EIGHTY-SIXTH CONGRESS

FIRST SESSION

ON THE

BONNEVILLE (PACIFIC NORTHWEST)-CALIFORNIA INTERTIE

APRIL 8 AND 9, 1959

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BONNEVILLE (PACIFIC NORTHWEST)-CALIFORNIA INTERTIE

WEDNESDAY, APRIL 8, 1959

U.S. SENATE,
SUBCOMMITTEE ON IRRIGATION AND
RECLAMATION OF THE COMMITTEE
ON INTERIOR AND INSULAR AFFAIRS,
Washington, D.C.

The subcommittee met, pursuant to notice, at 10 a.m., in room 3110, New Senate Office Building, Senator Clinton P. Anderson, chairman of the subcommittee, presiding.

Present: Senators Anderson, Jackson, Kuchel, and Neuberger.

Also present: Goodrich Lineweaver, committee assistant.

Senator ANDERSON. The subcommittee will be in order.

The hearings today and, with limited time, tomorrow, relate to several phases of the much discussed power intertie between the Pacific Northwest, or Bonneville system, and California and related power problems of the Pacific Northwest.

A news release of February 25, 1959, gives a general outline of the objectives of the hearing. A copy will be incorporated in the record of the hearings today.

(The release referred to follows:)

HEARINGS ON PACIFIC NORTHWEST-CALIFORNIA INTERTIE

(News release, Senate Committee on Interior and Insular Affairs.)

Senator Clinton P. Anderson, Democrat, of New Mexico, today announced hearings April 8–9, 1959, in room 3110, New Senate Office Building, on Pacific Northwest and related power problems on the Pacific coast. These involve an intertie of the Bonneville Power Administration system with transmission facilities in California.

The hearings will be held before the Subcommittee on Irrigation and Reclamation, Senate Committee on Interior and Insular Affairs. Senator Anderson is chairman of the subcommittee.

The hearings, Senator Anderson said, will be directed toward two phases:

The first phase relates to current negotiations between the Bonneville Power Administration, a Federal agency, and the Pacific Gas & Electric Co., of California for the transmission of surplus interruptible or dump energy from the Pacific Northwest to California. The subcommittee is asking the Bonneville Administration, through the Secretary of the Interior, and the P.G. & E. for information on these negotiations.

The second phase involves the engineering and economic feasibility of a high-voltage grid for the transmission of surplus electric energy from the Pacific Northwest or Columbia River power system to California, or vice versa. The Bonneville power system now has a surplus of interruptible or dump power and needs a market, Senator Anderson pointed out.

The Federal Power Commission, which has made extensive reviews of the potentials of an intertie, is being asked to supply information on the subject in advance of the hearings. The Commission has previously issued study reports on the intertie.

The Secretary of the Interior, who has jurisdiction over Bonneville Power Administration, is also being asked for the Department's views. The Secretary also has jurisdiction over the Bureau of Reclamation, which operates the Central Valley project power system in California.

The States of California, Washington, and Oregon, as well as other public agencies in the area, are also being requested to comment, as are also the major privately owned utilities which might be affected by the power intertie. These latter are the Pacific Gas & Electric Co. of California and the California-Oregon Power Co., of southern Oregon.

Suggestion for the hearings originated with U.S. Senator Clair Engle, of California, and Senator Richard L. Neuberger, of Oregon. The Bonneville-California intertie was originally recommended by the Defense Power Administration in the early fifties. A start toward the development was made in Oregon with appropriations by the Congress for the construction of the first leg of a connection between the Bonneville and the Bureau of Reclamation's Central Valley system in California. In 1953 the program was abandoned as a result of congressional action and a private utility took over the right-of-way and material. The Federal Treasury was reimbursed by a private utility in the amount of approximately $2,895,000 for expenditures made on the project.

Senator ANDERSON. Senator Clair Engle, of California, initiated the request for the hearings. His colleague, Senator Kuchel, a member of this committee, concurred, and Senator Neuberger, of Oregon, joined in the proposal. Chairman Murray, of the Committee on Interior and Insular Affairs, referred the inquiry to this subcommittee.

We are seeking to confine the hearings strictly to factual material, which will throw light on the several phases of the inquiry and guide the committee in considering the many problems involved. These problems are summarized, to some extent, in the news release.

At this point, it is suggested that witnesses summarize their presentations relating to these points:

1. The existing power situation in the Pacific Northwest, particularly with reference to physical and financial operations of Bonneville Power Administration. This point involves Bonneville's market for firm and interruptible or dump power and the effects on its financial situation. Economic and direct losses in this connection are obviously factors.

2. Previously discussions or plans looking to an intertie with California as a market for surplus Bonneville power.

3. Current negotiations of Bonneville Power Administration with Pacific Gas & Electric Co., and California-Oregon Power Co. for an intertie looking to transfer of surplus dump power to California.

4. The long-range potentials of the problem, which might involve suggested Federal construction of an intertie or a cooperative arrangement with public or privately owned utilities.

5. Related effects of the operations of the proposed intertie on the oil industry in California.

Statements will be printed in the record in full, as if read.

We will seek to accommodate witnesses from distant points as far as practicable. Persons desiring to be heard should check with the committee assistant, Goodrich Lineweaver, if they have not already done so.

As I have indicated, the Senior Senator from California, Mr. Kuchel, a member of the committee, concurred in the request for these hearings by his colleague, Senator Engle, who will make an opening statement. Other Senators interested in the subject will be recognized when their engagements permit them to appear.

From the downtown agencies, the first appearances will be by Assistant Secretary of the Interior Fred G. Aandahl, together with representatives of the Bonneville Power Administration and the Bureau of Reclamation.

Advance statements from the Department will be made a part of the record and witnesses are requested to summarize the presentations.

Advance statements have also been received from the Comptroller General dealing with the financial position of the Bonneville Power Administration as it relates to the need for a market for dump or intermittent power produced in its system.

The Federal Power Commission, also at my request, has prepared an analysis with respect to a high voltage intertie for the transmission of power between the Pacific Northwest and California. A representative of the Commission will be requested to summarize its report.

The Governors of California, Oregon, and Washington were also advised of the hearings. The Governor of Oregon indicated his State would not be officially represented. His letter will be inserted in the record. Representatives of the other Governors will be heard.

Telegrams from Governor Brown, of California, and Governor Rosselini, of the State of Washington, designating spokesmen for each of them, will be inserted in the record at this point.

(The documents referred to follow:)

OLYMPIA, WASH., *April 6, 1959.*

Re your letter February 27 this date.

Hon. CLINTON P. ANDERSON,
Chairman, Subcommittee on Irrigation and Reclamation, U.S. Senate, Washington, D.C.

Will be represented at the hearings of your committee April 8 and 9 on the proposed power transmission intertie between Bonneville Power System and north central California by Mr. Earl Coe, director of Washington State Department of Conservation, and Mrs. Francis L. Pearson, chairman of Washington State Public Service Commission.

ALBERT D. ROSELLINI,
Governor, State of Washington.

SACRAMENTO, CALIF., *April 7, 1959.*

Hon. CLINTON P. ANDERSON,
Chairman, Senate Subcommittee on Irrigation and Reclamation, Senate Office Building, Washington, D.C.

Request that time be assigned to Stanley W. Kronick, on Thursday, April 9, to appear as my special representative to present my views on proposed agreement between Bonneville Power Administration and Pacific Gas & Electric Co. It is my sincere hope that no such agreement will be executed unless and until joint studies are completed by Oregon, Washington, and California indicating most desirable course of action. Letter follows.

EDMUND G. BROWN, *Governor.*

Senator ANDERSON. A letter from the Governor of Montana, dated April 3, 1959, will also be inserted in the record today.

(The letter referred to follows:)

STATE OF MONTANA,
OFFICE OF THE GOVERNOR,
Helena, April 3, 1959.

HON. CLINTON P. ANDERSON,
Chairman, Senate Interior Subcommittee on Irrigation and Reclamation, Senate Office Building, Washington, D.C.

DEAR SENATOR ANDERSON: It is my understanding that a hearing has been scheduled before your Subcommittee on Irrigation and Reclamation of the Senate Committee on Interior and Insular Affairs on April 8 and 9 to consider two items of considerable interest to Montana and the Columbia Basin area.

First is the matter of a possible contract between Pacific Gas & Electric Co. of California and the Bonneville Power Administration for the sale of surplus power to Pacific Gas & Electric through existing lines plus one additional line involving the Pacific Gas & Electric and the California-Oregon Power Co.

Second, and more serious, is the matter of a study of a possible large Federal intertie between the Dalles Dam and Central Valley project Federal lines.

These two proposals, while on the surface involving California and Oregon, directly affect every State in the Columbia Basin. Therefore, I feel obligated to comment on them and to ask that this letter be read at your hearing on April 8 and included in the committee records.

As Governor of Montana, which lies partially in the Columbia Basin, I see no necessity for registering any objection to the proposed sale of surplus power to Pacific Gas & Electric Co. by the Bonneville Power Administration. Such a proposed contract for sale of power would in no way extend the preference clause for purchase of Federal power out of the Columbia Basin. As long as the contract is limited to a "when, as, and if" basis whereby the Bonneville Power Administration can withdraw the power any time it would be needed in the Columbia Basin, there is no problem.

This proposal would give Bonneville a source of outlet for its surplus power, thereby alleviating possible deficits similar to the one which occurred this past year. This is certainly desirable.

However, as Governor of Montana, I must strenuously register the objections of the State of Montana to a large Federal intertie between the Dalles Dam and Central Valley project Federal lines.

We in the Columbia Basin are well aware that the Bonneville Power Act creates a preference for basin REA's, municipalities, and other public bodies for the purchase of Bonneville power. Building a Federal intertie into California would mean that the preference clause of the Bonneville Act would be extended to similar groups in California. Without the interconnection, preference customers would be limited to the Columbia Basin where the electricity is generated. This seems only right and logical.

The result of such an intertie would be to have less power available to both preference and other customers in the Columbia Basin area, including Montana. This would also mean that such power as is now sold to Montana industries might well be drained off into California when any of the present contracts terminate.

Your subcommittee must also recognize that California already has the largest load centers in the west. If any of the Bonneville prime power should ever be committed to preference or other customers in California, it would be impossible to pull it back when needed in Montana or any other Columbia Basin State. All this would certainly be a boon to California. However, Montana and other Pacific Northwest States would be sacrificing future development potentialities in order to further California's already large industrial establishment.

As you are well aware, budget problems are plaguing Federal and State Governments. At such a time when we are all seeking a balance in Federal income and spending without serious tax increases, it is hardly justifiable to build a large Federal transmission line costing millions of dollars between California and Oregon solely on the basis of selling dump power alone. Therefore, it is obvious that Columbia Basin firm power would be sent into California at the expense of Columbia Basin development, which includes Montana.

We in Montana believe the State has an appropriate name, "The Treasure State." This is indicative of the vast potential of natural resources which we have. Chief among these is our water. Montana must protect its own resources, such as its water, by way of some geographical limitation on the power created in the State and in the basin. It is for reasons such as this that we have joined

with the other Basin States in the Columbia Basin Inter-Agency Committee and the Columbia Interstate Compact Commission.

Such schemes as this proposed Federal intertie between the Dales Dam and central California only create additional stress to have Montana's power supply taken out of our reach and beyond our use. Approval of this scheme would hurt Montana both now and in the future. Industrial development would be stymied. Valuable resources would be lost. Both labor and industry would be losers, as would the entire economy of Montana.

For these reasons, I submit to you that, as Governor of this State, Montana is unalterably opposed to any such Federal intertie proposal. However, Montana has no opposition to the proposed sale of surplus power by Bonneville Power Administration to Pacific Gas & Electric Co.

Very truly yours,

J. HUGO ARONSON, *Governor.*

Senator ANDERSON. We also have a letter from Mr. Robert W. Gerdes, executive vice president of the Pacific Gas & Electric Co. on the intertie negotiations with Bonneville Power Administration. We understand Mr. Gerdes is prepared to testify on the subject.

I will ask the committee assistant to insert in the record at this point the advance statements we have received. Also the letters from Senators Engle and Neuberger will be included in the record.

(The documents referred to follow:)

U.S. SENATE,
COMMITTEE ON ARMED SERVICES,
February 12, 1959.

Hon. JAMES E. MURRAY,
Chairman, Committee on Interior and Insular Affairs,
U.S. Senate, Washington, D.C.

DEAR SENATOR: Newspaper stories reveal that the Bonneville Power Administration has begun discussions with the Pacific Gas & Electric Co., to consider the possibility of building transmission lines to connect the Pacific Northwest grid with California. I know that your committee is vitally interested in this matter, and I am writing to suggest that you inquire into the nature of the negotiations between Bonneville and the P.G. & E.

So far as I am aware, no California public agencies have participated in the meetings. It is my concern that the exclusive discussions between Bonneville and the P.G. & E. may lead into another potential "partnership deal" such as the P.G. & E. and the Department of the Interior tried and failed to get through the last Congress with respect to the Trinity power development. On the basis of information so far available, it is my belief that it would be in order for you to request that no contract be entered into regarding the proposed Bonneville-California intertie until there has been ample public discussion before your committee.

As you probably know, a federally constructed intertie consisting of two 230-kilovolt lines between Bonneville and the Central Valley project of the Bureau of Reclamation was seriously considered some years ago. Engineering reports at that time indicated such an interconnection to be highly feasible. Other studies were made by the Federal Power Commission and the California Public Utilities Commission. The situation has not changed basically over these years except that greater volumes of surplus energy now exist in the Northwest which might be transmitted to California.

A transmission intertie between the Northwest and California has great potential for both areas, and for both public and private agencies. Because of the defense implications of such an intertie, its vital relationship to the maintenance of current low power rates in the Northwest, and its importance to the California water program, I regard the problem as one of national concern.

It is especially important that any interconnection be of adequate capacity to do the full job for all parties. My information is, however, that the Administration has under consideration a relatively small capacity line which, in the judgment of many competent professional experts, would not do the job that is required.

The Pacific Northwest-California power intertie becomes more important every month. Billions of kilowatt-hours of valuable electric energy are being wasted at Columbia River powerplants. Ridiculous as it may seem, the Bonneville Power Administration at the same time is going deeper in debt, or falling further behind on repayment. To raise Bonneville rates is not the answer. It will drive more northwest industries into Canada. As I have indicated, previous reports showed the transmission intertie to be one of the most feasible projects the Government could build. I advocated it vigorously in 1950 and 1951, but the present Administration succeeded in selling part of the necessary existing lines and the project was defeated.

I am sure you will agree also that the Bonneville-California intertie should be constructed so that public agencies retain their preference in the purchase of power under existing Federal law. The Department of the Interior should not be permitted to circumvent that expressed will of the Congress.

After the facts have become public before your committee, we should get together to see what legislation is necessary to make the best use of the Federal power resources on the Pacific coast. We should not permit a Federal agency to go broke while precious electric energy is going to waste that can be sold and profitably utilized.

I hope you will give immediate consideration to this subject and take what you consider to be appropriate action.

Sincerely yours,

CLAIR ENGLE,
U.S. Senator.

Senator ANDERSON. I have a telegram from M. O. Gardner, city manager of the city of Forest Grove, Oreg., saying:

The city of Forest Grove light department has a vital interest in the Pacific Northwest-California major intertie to maintain present BPA rates and to have a temporary market for surplus power that we may acquire, we need this intertie. We urge your committee's support on this program.

The report of the Department of Interior is available and will be inserted in the record at this point. It is dated April 7, 1959.

(The report referred to follows:)

U.S. DEPARTMENT OF THE INTERIOR,
OFFICE OF THE SECRETARY,
Washington, D.C., April 7, 1959.

Hon CLINTON P ANDERSON,
Chairman, Subcommittee on Irrigation and Reclamation,
U.S. Senate,
Washington, D.C.

DEAR SENATOR ANDERSON: This is in reply to your letter of March 23, to which was attached a letter from Senators Magnuson and Jackson regarding the October 20, 1953, private utility contract, under which a priority for 500,000 kilowatts of firm power is established in favor of the private utilities, subject to the preference and priority clause of the Bonneville Act, before 70,000 kilowatts of additional firm power is available for direct sale to industries. The pertinent section of the contract is as follows:

"First: All such power and energy as may be necessary to meet the requirements of the public bodies and cooperatives and persons and organizations entitled to preference under said acts, together with reserves therefor, adequate to supply the normal future growth of said bodies, such amounts being presently in the amount of 1 million kiowatts and estimated to be approximately 1,800,000 kilowatts of prime power by 1960;

"Second: Such firm power and energy as is necessary to carry out all presently existing contracts of the Administrator with industrial consumers, such amounts now being 1,052,460 kilowatts of firm power; and other contracts included in the total priority requirements;

"Third: To the purchasers hereunder to supply a portion of their requirements for domestic and rural consumers, power and energy in the amount of 500,000 kilowatts of firm power;

"Fourth: In addition to the 1,052,460 kilowatts referred to above for industrial consumers, an additional amount not exceeding 70,000 kilowatts of firm power:

"Fifth: To the purchasers hereunder for the purpose enumerated in the third subsection hereof, in the additional amount of 1 million kilowatts of firm power."

Bonneville is now supplying these utilities in excess of 500,000 kilowatts and had been supplying them in excess of 500,000 kilowatts since the beginning of this contract year starting September 1, 1958.

Our analysis of loads and resources made in the spring of 1958 indicated that we would have 500,000 kilowatts available for the private utilities and an additional 70,000 kilowatts available for industries. We thereupon offered the 70,000 kilowatts to industries on a short-term basis. This offer was made on the basis that such power would be available to the industries on a firm basis for the period in which BPA had 500,000 kilowatts available for the utilities. Data available at that time indicated such amounts would be available for the private utilities through August 31, 1960. Later analysis indicates that we will have this amount from the private utilities through 1962–63 and the industries have been informed that we will be willing to supply this power through August 31, 1963.

The enclosed report, "Power Outlook 1958–68," prepared by the Bonneville Power Administration in November 1958 shows in table II the estimated distribution of Federal power under critical year conditions through the 1958–68 period.

In view of the fact that the industries served by BPA are operating at only 73 percent of their rated capacity, such industries are not interested now in much additional firm power on a short-term basis. Of the 70,000 kilowatts BPA sold only 35,130 kilowatts. Of this 35,130 kilowatts, 15,130 kilowatts have been sold on a short-term basis and 20,000 kilowatts on a long-term basis.

Bonneville Power Administration determined in August 1958 that its contract with Harvey Aluminum, which predates the utilities' contracts, required BPA to supply the 20,000 commitment to Harvey for the balance of the term of their contract. This has been done and the 20,000 kilowatts of the junior firm in the Harvey Aluminum contract is now firm power.

We have under consideration sale of the remaining 50,000 kilowatts on a long-term basis in accordance with section 18 of the contract which reads as follows:

"18. Sale of power not required by purchaser: Nothing in this contract shall limit or be construed to limit the right of the Government acting through and by the Administrator to sell on a firm basis any amount of firm power which is made available to the purchaser under this contract, or to other purchasers under similar contracts, but which the purchaser or other purchasers do not agree to purchase."

We recognize that the recent decline in purchases of secondary power by industries has adversely affected the BPA financial picture. We also recognize that if we could develop additional markets for this secondary energy and for our large summertime seasonal power, the financial situation of the BPA could be substantially improved. It is for this reason that the Administrator has been carrying on discussions and negotiations looking toward a possible sale of some of the secondary energy not presently needed by the Pacific Northwest and subject to immediate withdrawal for use in the Pacific Northwest region when needed. We are, of course, withholding further action on this matter pending the hearings which you have scheduled for April 8–9.

We will be pleased to go into this matter further and in more detail during the course of these hearings if it is your desire.

Sincerely yours,

FRED G. AANDAHL,
Assistant Secretary of the Interior.

Senator ANDERSON. The letter from Hon. Edmund G. Brown, Governor of California, states that he has asked Mr. Stanley Kronick to appear as his representative. His letters, dated March 18 and April 6 will be made a part of the record at this point.

(The letters referred to follow:)

STATE OF CALIFORNIA, GOVERNOR'S OFFICE,
Sacramento, March 18, 1959.

HON. CLINTON P. ANDERSON,
Chairman, Subcommittee on Irrigation, and Reclamation, Senate Office Building, Washington, D.C.

DEAR SENATOR ANDERSON: Thank you for your letter of February 27, 1959, and for the accompanying news release concerning the hearings scheduled for April 8 and 9, 1959, on the proposed power transmission intertie between the Bonneville Power Administration system and the California power systems.

Before April 1, I shall furnish you with a statement of my views in the matter. In the interim, you may be interested to know that representatives of the Governors of Oregon and Washington and my representatives met in Salem, Oreg., on March 4, to discuss the matter of a power intertie. It was the concensus of that group that all three States should join in a feasibility study of the intertie and that a Pacific Coast Governors' Power Committee should be appointed, comprising three representatives of each of the three Governors concerned, to formulate and direct the study. I am asking the State legislature to appropriate funds for our share of such a joint study, as well as certain independent studies which I believe the State of California itself should make.

I am interested not only in the feasibility of an intertie with the existing power systems of California, but also as a means of obtaining power to meet the pumping requirements under the State's plans for transporting water from our areas of surplus in northern California to the great areas of water deficiency in the San Joaquin Valley and southern California.

I am confident that the State legislature at its current session will approve my proposals for a State water development program and will provide the financing therefor.

Sincerely,

EDMUND G. BROWN, *Governor.*

STATE OF CALIFORNIA, GOVERNOR'S OFFICE,
Sacramento, April 6, 1959.

HON. CLINTON P. ANDERSON,
Chairman, Subcommittee on Irrigation and Reclamation, Senate Office Building, Washington, D.C.

DEAR SENATOR ANDERSON: In my letter of March 18, 1959, I stated that I would furnish you with a statement of my views on the proposed power transmission intertie between the Bonneville Power Administration system and the California power systems.

I have asked Mr. Stanley W. Kronick to appear as my representative to present my views to your committee at the hearings to be held on April 8 and 9. For that reason I will not go into a detailed statement of them in this letter. I do wish to state now, however, that I sincerely hope that no agreement is executed with the Pacific Gas & Electric Co. at this time. An opportunity should be given to the States of Oregon, Washington, and California to complete a study on the basis of which an informed decision can be reached which will be in the interests of all three of the affected States and the Nation. It appears to me an arrangement should be made which will permit the maximum utilization of the available energy. Such a result would be of benefit to all agencies, both public and private, within the three States.

This matter should be completely studied before any commitments are made. No such inclusive study has been made to this date. I am confident that the proposed agreement with Pacific Gas & Electric Co. would seriously hamper, if not preclude, the entering into an arrangement which preliminary examination now indicates would provide greater benefit to all concerned. As I have indicated, Mr. Kronick, with your permission, will amplify these remarks in his presentation to our committee.

Sincerely,

EDMUND G. BROWN, *Governor.*

Senator ANDERSON. The Governor of Oregon has sent us a letter.
Senator KUCHEL. What are his views, if you can summarize them?
Mr. LINEWEAVER. His views are that the State of Oregon will not

be represented at the hearing. That if an intertie is to be developed, they favor the study being made by the States.

Senator ANDERSON. And not by the Federal Government.

Mr. LINEWEAVER. And not by the Federal Government.

(The letter referred to follows:)

OFFICE OF THE GOVENOR,
STATE CAPITOL,
Salem, Oreg., March 13, 1959.

Hon. CLINTON P. ANDERSON,
U.S. Senator, Washington, D.C.

DEAR SENATOR ANDERSON: Thank you for your letter concerning the hearings to be held April 8 and 9 relating to the proposed power transmission intertie with California.

It is regretted that it will not be possible for this office to be represented at the time of your hearing. We are very interested in the proposed intertie and have done everything possible to encourage a feasibility study. Senator Richard Neuberger had written earlier and we have informed him of the most recent developments here in Oregon concerning the program. In order that you may be advised of both the interest of the State of Oregon and the steps which we have taken to encourage the intertie, I am enclosing a copy of the letter which I directed to Senator Neuberger and the minutes of the meeting held in my office with representatives of the Governors of Washington and California on March 11.

The intertie now being negotiated between Bonneville Power Administration and the Pacific Gas & Electric Co., which will be considered in the first phase of your hearings, is in our opinion very desirable. We see no conflict between the establishment of this intertie and the conduct of a feasibility study which we are hopeful will be undertaken by the three Pacific Coast States. This study would relate to the matters to be considered in the second phase of your hearings. Although, as indicated in the letter to Senator Neuberger, we are not in a position at the present time to state positively that the States will undertake the study, we are hopeful that satisfactory arrangements can be agreed upon and that the States will proceed. If such a program does develop it would be the desire of this administration that the study be left to the States, rather than being undertaken as a Federal project.

I certainly appreciated your consideration in forwarding me the information regarding the proposed meeting and the opportunity to express our views on this matter.

Sincerely yours,

MARK O. HATFIELD, *Governor.*

Senator ANDERSON. Are there additional statements to be inserted in the record at this point?

Mr. LINEWEAVER. No, sir.

Senator ANDERSON. The first statement this morning will be made by Senator Clair Engle, of California, who first requested this hearing.

STATEMENT OF HON. CLAIR ENGLE, A U.S. SENATOR FROM THE STATE OF CALIFORNIA

Senator ENGLE. Mr. Chairman, I wish to express my appreciation to you and to the chairman of the full committee for calling these hearings, as suggested to Senator Murray in my letter of February 12.

Over 8 years ago, on March 19, 1951, I introduced a bill, H.R. 3294, in the 82d Congress, to authorize construction of the Bonneville-Central Valley project intertie. The stated purpose of the bill was "to conserve water, power, and oil." That bill was based on recommendations made in 1950 by the Federal Power Commission and the Defense Power Administration. Both of these studies pointed to the natural differences between the areas which make a Federal

intertie mutually beneficial. One difference is hydrologic: The long Columbia River reaches a peak flow during a midsummer in contrast to the relatively short Sierra Nevada Mountain rivers in California which peak in late winter and spring. The other difference is economic: The powerload characteristic of the Northwest is based largely on aluminum and industrial production, whereas the summer peakloads in California are influenced heavily by local irrigation pumping. In short, the heavy waterflows in the Columbia during the summer make available large quantities of power which cannot be used in the Bonneville system. This power surplus at that particular time fits into the peak power needs in the Central Valley project. I believe that the unique characteristics of the power production of these two great Federal systems and the differing nature of their powerloads will permit them to be integrated with benefits to both systems.

Basically, we have two huge public power systems—the Bonneville Power Administration and the Central Valley project. The question that needs to be resolved is whether or not these two systems can be hooked together in a fashion that will be beneficial to both systems.

I might say here, Mr. Chairman, that it is not our intention from California to undertake to seek any power or to pirate any power from the Northwest. I want to make that perfectly clear. We do think that if the two systems can be hooked together beneficially to both sides—and I emphasize that—it should be done.

If, as I believe, these two great systems would supplement each other and hooking them together would be beneficial to both, then the question is, What is the best method of building the intertie? Is it logical under those circumstances to put a private power broker between the two systems handling the transfer of energy for a fee?

I call attention to the fact that Bonneville power is public power. The Bonneville Project Act of August 20, 1937, has one of the strongest public power statements of any Federal law in existence. Under that act the Bonneville Administrator is directed to provide electric transmission lines and such other facilities as he finds necessary for the purpose of transmitting electric energy to interconnect the Bonneville project with other Federal projects and publicly owned power systems now or hereafter constructed.

My statement does not put that language in quotes, but that is almost an exact quotation of the language, Mr. Chairman, of the Bonneville Project Act of 1937.

Senator ANDERSON. Is it limited to other Federal projects and publicly owned power systems?

Senator ENGLE. I believe it is, Mr. Chairman.

Senator ANDERSON. Would that be pertinent to this? I may not know much about it, but I understood it was something to do with the contract written up with Pacific Gas & Electric. Is Pacific Gas & Electric a publicly owned power system?

Senator ENGLE. No.

Senator ANDERSON. Therefore, this would not apply to that system.

Senator ENGLE. Exactly. This would certainly cover the interconnection of the Bonneville power system and the Central Valley project.

I have before me the language of section 2(b) of the Bonneville Project Act of August 20, 1937, stating that in order to encourage the widest possible use of all electric energy that can be generated and

marketed and to provide reasonable outlets therefor and to prevent the monopolization thereof by limited groups, the Administrator is authorized and directed to provide, construct, operate, maintain, and improve such electric energy, and so forth, and so forth, appurtenant thereto as he finds necessary, desirable, and appropriate for the purpose of transmitting electric energy available for sale from the Bonneville project to existing and potential markets and for the purpose of interchange of electric energy to interconnect the Bonneville project with other Federal projects and publicly owned power systems nor or hereafter constructed.

Senator KUCHEL. Does my able colleague from California question the legality of any sale of surplus Bonneville power to a private agency or not?

Senator ENGLE. No; I do not. What I am saying is that the language of the Bonneville Act is the plainest possible direction to the Administrator of the Bonneville system to proceed with the public distribution so far as possible, and the construction of transmission lines by the Federal Government to interconnect that system with other systems. What they have done instead of that—instead of following this law—they have undertaken to negotiate a contract with private utilities for the purpose of interconnecting these two great systems. In other words, we have the Central Valley power system and the Bonneville system. There is to be a bridge built between them. The purpose of this contract is to put a tollkeeper in the nature of a private utility between the two systems to handle the transfer of energy for a fee. As I say in my prepared statement, this would certainly cover the interconnection of the Bonneville power system and the Central Valley project. In other words, the language of section 2(b) of the Bonneville Project Act is sufficiently broad to authorize this interconnection.

Furthermore, that same act provides for the usual preference and priority to public bodies and cooperatives in access to the Federal power. This, of course, is in line with the preference provided under reclamation law for Central Valley project power. In the light of the principles laid down in the Bonneville Act of 1937 and the reclamation law, I believe that there is a clear mandate to the Secretary of the Interior to interconnect these two systems, if they are to be interconnected, with a federally built transmission line.

I call attention to the following letter sent by Gov. Edmund G. Brown, of California, to Gov. Albert D. Rosellini, of Washington, in which he stated that, "In fairness to all concerned, I believe an intertie should be a common carrier." In saying that, our Governor had in mind that the intertie which is authorized should be built to serve all of the prospective consumers and producers, both private and public. My concern with the proposal in the draft contract, which is in possession of this committee, is that it would provide only for the distribution of this federally generated power to the private utilities and their customers.

(The letter from Gov. Edmund G. Brown, of California, to which Senator Engle referred is as follows:)

STATE OF CALIFORNIA,
GOVERNOR'S OFFICE,
Sacramento, April 1, 1959.

Subject: Pacific Northwest-California power intertie.

Hon. ALBERT D. ROSELLINI,
Governor of Washington, Olympia, Wash.

DEAR GOVERNOR ROSELLINI: I am writing to express my concern over the possible establishment of an interstate power tie-in done in haste and preempting the thorough but rapid study of the problem by the three States involved.

I am convinced that there is room for both private agency and public agency use of a power intertie if it is properly designed, financed, and constructed. In fairness to all concerned, I believe an intertie should be a common carrier.

I recognize that the situation in each of the three States is different. For example, in California we are primarily concerned about energy for pumping water in our statewide water program. Apparently, surplus energy is available in the Northwest during the same months that we are hard pressed for power supplies in California.

Because of the large amounts of surplus energy that will be needed in our water program, and because the Northwest surplus may solve the problem, I believe any premature stopgap measure might deter the States from proceeding later on a basis which would provide for maximum use of these power resources. That is why I would not favor the proposed agreement between the Bonneville Power Administration and the Pacific Gas & Electric Co. until and unless the three State study shows that it is definitely a desirable part of the larger job that must be done.

I am informing California's two U.S. Senators, Clair Engle and Thomas H. Kuchel, of my views regarding this agreement because it is to be the subject of a hearing in Washington on April 8 and 9.

Sincerely,

EDMUND G. BROWN, *Governor.*

(The same letter was sent to Gov. Mark Hatfield, of Oregon.)

The power in both the Bonneville and Central Valley project systems is public power under both the Bonneville Act and the reclamation law. Cities, municipalities, and other public agencies are entitled to a preference to that power. But if the intertie of these two ssytems is authorized under the proposed contract, this preference will be defeated and the only access Federal agencies and preference customers will have to this power will be as customers of the private utilities. I do not believe that that will be in conformity with either the present law or the basic philosphy under which both the Bonneville project and the Central Valley project were constructed.

I may have further suggestions to offer after the technical experts have testified and, accordingly, I respectfully request the permission of the commitee to supplement my remarks later in the hearings or to present further documentary material.

Senator ANDERSON. Senator Kuchel, you referred to this power sales contract executed by the United States acting by and through the Bonneville Power Administration and the Pacific Gas & Electric Co. dated March 20, 1959.

Senator ENGLE. I referred to the draft as I understood it. It had not been executed.

Senator ANDERSON. It is a preliminary work draft. As I understand this is with a private company.

Senator ENGLE. That is correct.

Senator ANDERSON. As I understood your language up here, you thought the law made some reference to other Federal projects and publicly owned power systems.

Senator ENGLE. That is right.

Senator ANDERSON. Is it my understanding that this should be done by what the law provides with Federal projects and publicly owned systems and not with private utilities?

Senator ENGLE. That is correct. What I say is that section 2(b) of the Bonneville Project Act makes it very plain that the direction is on the Administrator to interconnect with other public systems by the construction of transmission lines. Now they are going to make a deal with the P.G. & E. to build the interconnect of this public system with the Central Valley project system.

Senator ANDERSON. Can they do that without the authority of Congress?

Senator ENGLE. I don't know.

Senator ANDERSON. If the law is plain, wouldn't they have to change the law?

Senator ENGLE. I don't know.

Senator ANDERSON. We will ask them that point. I was trying to get your point of view.

Senator ENGLE. This section has some words in it which say "in his discretion," and so forth, and "as he deems advisable," and that sort of thing. There are some weasel words in the act. But the plain import and intent and direction of the law is that the interconnection ought to be built by a Federal agency.

Senator KUCHEL. What my colleague suggested earlier in answer to my question was that he did not question the legality of this contract, but in his prepared statement subsequently he suggested:

> There is a clear mandate to the Secretary of Interior to interconnect these two systems with a federally built transmission line.

Senator ENGLE. What I am saying, Senator Kuchel, if it does not violate the plain language of section 2(b) of the Bonneville Project Act, it violates the spirit and intent of that section, because in the section it refers to the objective of encouraging the widest possible use of all electric energy that can be generated and marketed, and so forth, and in section 4(a) it proceeds to restate the preference given to cities, municipalities, and other public agencies in the same kind of language that in 18 other acts since 1906 have been used for the establishment of that preference to public agencies and other public bodies.

Senator KUCHEL. If the proposed contract were to be entered into between the Bonneville Power Authority and the Pacific Gas & Electric Co. of California, it is then my colleague's position that to the extent that power was sold to a private company the preference clause of the Bonneville Power Act itself could not be complied with to the extent that public agencies might wish to purchase any portion of that power?

Senator ENGLE. From my understanding of the proposed draft contract, this is not a wheeling arrangement in which the utility would act as a carrier; it is an arrangement in which the utility would get control of the power itself, so that public agencies in California, including the State of California, which incidentally has applied for power from the Central Valley project or other public power available in that area, would not be able to get it except as a customer of the Pacific Gas & Electric Co.

Senator KUCHEL. What is your understanding, Senator Engle, of the status of this proposed contract at this time?

Senator ENGLE. I understand it has been negotiated. It is subject to discussion down in the Department. Its execution was requested to be delayed pending some study of this matter by this committee.

Senator ANDERSON. You mean it was ready for execution? We will ask the Secretary.

Senator ENGLE. I did not say that. I said it was under discussion down there. I don't know whether it is in final form or not.

Senator ANDERSON. I think the best testimony can come from the Department of Interior.

Senator JACKSON. I wired Dr. Pearl on this question. It is my understanding that the contract has not been executed. There have been negotiations. There is a draft of the contract.

Dr. PEARL. That is correct.

Senator JACKSON. We asked that it be held up pending these hearings, and BPA agreed to that.

Senator ANDERSON. The best testimony is certainly from Interior and from the Bonneville Power Administration as to where it stands. Is it your understanding, Senator Engle, that this would require appropriations of any funds from the Federal Government?

Senator ENGLE. I do not believe so, but I have not studied the contract.

Senator ANDERSON. We do not have the power of the purse over this one as we have over some others. They might get by with this one.

Mr. Lineweaver, have we had any ruling by the Comptroller General on this project?

Mr. LINEWEAVER. Not on the contract. The representatives of the Comptroller General will appear later in the hearing. I do not think this contract has ever been submitted to the Comptroller General.

Senator ANDERSON. Should it not be before we get far into this hearing? I found it very useful in atomic energy to send things to him.

Mr. LINEWEAVER. The representatives of the Comptroller General are here and scheduled to testify later.

(The contract referred to follows:)

POWER SALES CONTRACT EXECUTED BY THE UNITED STATES OF AMERICA, DEPARTMENT OF THE INTERIOR, ACTING BY AND THROUGH THE BONNEVILLE POWER ADMINISTRATOR AND PACIFIC GAS & ELECTRIC CO.

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Exhibit A (Bonneville wholesale power rate schedule C–4 (as amended Dec. 20, 1954)).
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Exhibit C (Bonneville wholesale energy rate schedule H–3 (as amended Dec. 20, 1954)).
Exhibit D (General contract provisions (GCP form POU–10)).

This POWER SALES CONTRACT, executed _____, 1959, by the UNITED STATES OF AMERICA (hereinafter called "the Government"), Department of the

Interior, acting by and through the BONNEVILLE POWER ADMINISTRATOR (hereinafter called "the Administrator"), and PACIFIC GAS & ELECTRIC CO. (hereinafter called "Pacific"), a corporation organized and existing under the laws of the State of California, WITNESSETH:

Whereas Pacific is a public service company engaged in the sale and delivery of electric energy to customers in the State of California, and is the owner of an electric generation, transmission, and distribution system which is used by it to supply electric energy to such customers; and

Whereas the Administrator is engaged in the sale of electric energy at wholesale to customers of the Government in various States in the United States of America, and the Government is the owner of an electric transmission system which is used to supply electric energy to such customers; and

Whereas during certain months of each year the Government spills water from its reservoirs which, if used to generate electric energy, would be in excess of the requirements of the Government's service area; and

Whereas Pacific during such months would be able to use the excess electric energy that would be generated from the water so spilled and wishes to purchase such electric energy on an interruptible basis; and

Whereas the Government is willing to generate excess electric energy from the water which would otherwise be spilled and make interruptible power available to Pacific; and

Whereas Pacific may wish to purchase additional electric energy, on a provisional basis, from additional storage releases beyond those normally made by the Government, such energy to be replaced in full to the Government if required by the Administrator, and the Government by reason of such replacement will benefit from such sales without jeopardizing its ability to fulfill its contractual or other legal obligations; and

Whereas the parties hereto, by virtue of this agreement, desire to provide for the sale of such interruptible power and provisional energy which the Government may have available and which Pacific may be able to utilize, to make provision for emergency and breakdown relief, and other matters; and

Whereas such sale of power and energy will result in an increase of revenue to the Government and will conserve oil and natural gas resources which Pacific would otherwise consume for the production of electricity; and

Whereas the Administrator and California-Oregon Power Co. (hereinafter called "Copco") have entered into a transmission agreement (designated as contract No. 14–03–001 – —) whereby Copco shall make available to Pacific the power and energy which the Government shall make available to Copco for such purpose; and

Whereas the ability of the Government to make power and energy available to Pacific as provided herein shall be in all respects subject to the provisions contained in said transmission agreement executed by the Administrator and Copco; and

Whereas the electric energy delivered hereunder may be commingled with other electric energy delivered under agreements between Pacific and Copco, and the parties hereto desire to provide for scheduling of deliveries hereunder; and

Whereas the Administrator is authorized by order No. 2563 dated May 2, 1950, and order No. 2753 dated April 7, 1954, as amended, of the Secretary of the Interior to dispose of electric energy generated at various Federal hydroelectric projects in the Northwest pursuant to the specific statutory authority as to each of such projects designated in order No. 2753, as amended;

Now, therefore, the parties hereto mutually agree as follows:

1. *Term of agreement.*—Subject to the other provisions contained herein, each of the provisions of this agreement shall be effective for the term of 10 years commencing at 12 p.m. on the date of execution: *Provided, however,* That after the expiration of such 10 years, this agreement shall continue in effect until terminated by either party upon 1 year's prior written notice to the other, but in no event for a longer period than 20 years from the date of execution; *Provided further,* That the Administrator may cancel this contract upon 5 year's written notice in accordance with section 5 (a) of the Bonneville Act, as amended.

2. *Sale of interruptible power.*—Subject to the other provisions contained herein, the Administrator shall make available to Copco for transmission to Pacific, and Pacific shall purchase, such amounts of interruptible power and electric energy as Pacific requests and the Administrator determines, at his sole discretion, that he has available for delivery: *Provided, however,* That such power and energy may be curtailed by the Administrator at any time.

3. *Emergency and breakdown relief.*—(*a*) If a breakdown of, or emergency on, the system of either party occurs, the other party may, at its sole discretion make available, while such breakdown or emergency exists, all or such part of the excess electric energy required for such system as the supplier determines it can supply, consistent with its obligations to its other customers, and the determination so made shall be final and conclusive as to both parties.

(*b*) If either party supplies excess electric energy to the other party pursuant to the provisions of subsection (*a*) of this section and requests replacement thereof, the other party shall make an equivalent amount of excess electric energy available to the supplier at such time as may be agreed upon by the dispatchers of the parties hereto, but not later than 90 days after such energy has been supplied.

4. *Provisions relating to delivery.*—The power and energy made available hereunder by either party to the other shall be deemed to be delivered at one or more of the points in Oregon immediately adjacent to the border between the States of Oregon and California where Copco's transmission lines Nos. 3, 4, 18, 19, and 62 are or will be located.

The total amounts of electrical energy flowing between the systems of Copco and Pacific will be determined from meters owned by Pacific or Copco and located so as to measure such flows.

5. *Amount of power delivered.*—(*a*) The kilowatts of power delivered during any hour by the Government to Pacific at one or more of the points of delivery described in section 4 hereof, during any billing period, shall be the amount scheduled for such hour, as provided in subsection (*a*) of section 10 hereof.

(*b*) The number of kilowatt-hours delivered hereunder by the Government to Pacific during any billing period shall be the sum of the amounts scheduled for each hour during such period, unless the total number of kilowatt-hours flowing to Pacific registered by the meters described in section 4 hereof, for any hour is less than the scheduled amount for such hour, in which event the number of kilowatt-hours registered on such meters for such hour, adjusted for losses to said points of delivery, shall be substituted for the scheduled amount for such hour in determining the total number of kilowatt-hours delivered during such billing period.

(*c*) The number of kilowatt-hours and the hourly rate at which power is delivered by Copco to the Government for the account of Pacific shall be determined from meters installed so as to measure the flow of electric energy between the systems of Copco and the Government, adjusted for losses to the points of delivery described in section 4 hereof after first deducting from the metered amounts such amounts of electric energy as are scheduled by Copco from its system to the Government under any contracts other than said contract No. 14–03–001– —between Copco and the Government. If deliveries from Pacific to the Government are made from systems other than Copco's or Pacific's, such deliveries shall be determined from the amounts scheduled from such other systems.

6. *Payment for power delivered.*—(*a*) Pacific shall pay the Administrator for the interruptible power and electric energy made available under section 2 hereof in accordance with the applicable provisions for the sale of such power and energy specified in Bonneville wholesale power rate schedule C–4 (as amended December 20, 1954) and section 15.1 of the general rate schedule provisions pertaining to interruptible power. Such schedule and provisions, copies of which are attacher hereto as exhibits A and B, respectively, are hereby made a part of this agreement.

Pacific shall pay the Administrator for the electric energy made available under section 3 hereof, and not replaced within 90 days thereafter, at the rate specified in Bonneville wholesale energy rate schedule H–3 (as amended December 20, 1954), attached hereto as exhibit C and hereby made a part of this agreement.

(*b*) The Administrator shall pay Pacific for the excess hydroelectric energy made available under section 3 hereof, and not replaced within 90 days, at 2.5 mills per kilowatt-hour and for the excess fuel-generated electric energy made available under said section 3, and not so replaced, at the price per kilowatt-hour of such fuel-generated energy agreed upon by the parties hereto prior to delivery thereof.

7. *Sale of provisional energy.*—Subject to the other provisions contained herein, the Administrator shall, during August and September of each year during the term hereof when full use of storage releases can be made at the

Federal plants, make available to Pacific, at its request, such provisional energy as he determines can be made available from storage releases in addition to those releases which would otherwise be made by the Government, including deliveries of such energy to customers of the Government under contracts which provide for the sale of provisional energy: *Provided, however,* That the Administrator may, but shall not be obligated under this section to, make available provisional energy hereunder to Pacific during any August or September in which the total number of kilowatt-hours made available to Pacific under section 2 hereof and under this section exceeds 144 million kilowatt-hours for each month: *Provided further,* That if the Administrator determines that the capacity of the transmission and transformation facilities used by the Government in making deliveries to Copco for the account of Pacific is insufficient to enable the Government to deliver the amount of electric energy requested by Pacific in accordance with this section, together with the entire requirements of all other customers of the Government which are served by such facilities, the Government shall be obligated to deliver hereunder during such time only such amount of electric energy as is then specified by the Administrator.

The Government's dispatchers shall notify Pacific's dispatchers of the time when delivery of provisional energy begins. Energy so made available will be accounted for in the provisional sales account as provided in section 9 hereof.

8. *Replacement of provisional energy.*—(*a*) At any time, or from time to time, during the period from October 1 through March 31 following the period in which provisional energy was supplied to Pacific in accordance with section 7 hereof, the Administrator may request Pacific to return such energy in an amount not to exceed the number of kilowatt-hours then outstanding (debits which have not been offset by credits) in the provisional sales account. Upon the receipt of such request Pacific shall immediately arrange with the Administrator for the return of the required amount of energy during Pacific's off-peak hours under conditions which will enable the Administrator to utilize such energy, and shall provide for delivery of such electric energy to the Government's system before 12 p.m. on March 31.

(*b*) Pacific, consistent with its obligations to its customers, may, but shall not be obligated to, return such electric energy at a rate greater than the rate at which the Government has made provisional energy available pursuant to section 7 hereof. Energy so delivered by Pacific will be accounted for in the provisional sales account as provided in section 9 herein.

9. *Provisional sales account.*—(*a*) A provisional sales account will be maintained by the Administrator, and he will record therein in kilowatt-hours the debits and credits to be made to Pacific hereunder.

(*b*) At the end of each August and September during the term hereof Pacific will receive a debit in kilowatt-hours in the amount computed by multiplying by the replacement correction factor then in effect the kilowatt-hours of provisional energy delivered by the Government, determined as provided in section 5 hereof, during such months. Such replacement correction factor shall be 1.15 until superseded by written notice from the Administrator to Pacific.

(*c*) At the end of each month during the period from October 1 to March 31, Pacific shall receive a credit in such account of one kilowatt-hour for each kilowatt-hour of replacement energy made available to the Government during such month.

(*d*) Prior to June 1 of each year during the term hereof, and after making the credits in the provisional sales account which are required to be made as hereinabove provided, the Government shall bill Pacific, and Pacific shall pay: (1) the amount computed by multiplying the rate per kilowatt-hour of the provisional energy delivered, as determined in subsection (*e*) of this section, by the kilowatt-hours still outstanding in the provisional sales account at 12 p.m. on March 31 of each year after first dividing such amounts of kilowatt-hours by the replacement factor specified in subsection (*b*) of this section, and (2) the amount, in dollars, paid to Copco for the transmission to and from Pacific of the provisional energy returned by Pacific pursuant to subsection (*b*) of section 8 hereof.

(*e*) The rate per kilowatt-hour of the provisional energy delivered pursuant to section 7 hereof shall be computed by dividing by the number of kilowatt-hours so delivered a billing amount determined in accordance with the provisions of exhibits A and B hereof, as specified in subsection (*a*) of section 6 hereof.

10. *Scheduling arrangements.*—(*a*) The Government's dispatcher shall schedule to Copco during each hour for delivery to Pacific, subject to the provisions of sections 2, 3, and 7 of this agreement, any power and energy requested for such hour by Pacific's dispatcher.

(*b*) Pacific's dispatcher shall schedule to Copco during each hour for delivery to the Government, subject to the provisions of sections 3 and 8 of this agreement, any electric energy requested for such hour by the Government's dispatcher.

(*c*) The dispatchers shall hold deviations from schedule to a minimum.

11. *Reactive.*—Each of the parties hereto will jointly plan and operate its system for mutual advantage and so that the flow of reactive power hereunder will not adversely affect the system of the other.

12. *Tie line and frequency control.*—The parties hereto shall operate adequate tie line and frequency control equipment so as to minimize the power swings over their interconnecting ties and shall contribute a proportionate share of the interconnected system frequency regulation.

13. *Operating committee and duties.*—The parties hereto shall establish an operating committee consisting of an equal number of representatives from each party. Such operating committee shall meet from time to time to agree upon methods of operation and related matters in order to achieve the purposes of this agreement, and such matters shall include, but not be limited to, reactive power, voltage regulation, tie line control settings, clock corrections, deviations from schedules, emergency operations, estimating during meter outages, and scheduling arrangements.

14. *General provisions.*—The general contract provisions (GCP form POU-10), attached hereto as exhibit D, are hereby made a part of this agreement, except that, for the purposes of this agreement, the following sections shall not apply: 2(*a*), 2(*b*), 4, 8, 10, 11, 13, 17, 19, 20, 21, 26, 27, 31, and 34.

15. *Approval of agreement.*—This agreement shall not be binding upon the parties hereto until it has been approved by the Secretary of the Interior, but when so approved shall be effective as of the time specified in section 1 hereof.

In witness whereof, the parties hereto have executed this agreement in several counterparts.

UNITED STATES OF AMERICA,
DEPARTMENT OF THE INTERIOR,
By_____.
Bonneville Power Administrator

PACIFIC GAS AND ELECTRIC COMPANY,
By_____.

Attest:

_____

Senator ANDERSON. Senator Jackson.

Senator JACKSON. Senator Engle, what you are saying in part is that it is your feeling in connection with this preliminary work draft which is referred to in the copy of March 20, 1959, would indirectly violate the preference clause, at least?

Senator ENGLE. I think it would. I think also it would violate the basic intent, direction and purpose of the Bonneville Project Act of 1937. It is very plain from reading that language that the Congress intended the widest possible distribution of public power and the interconnection of Bonneville system with other public systems by Federal transmission lines.

Senator JACKSON. Secondly, it is your opinion that even if you had a wheeling agreement that the person or firm or corporation or corporations that would do the wheeling should act as a common carrier?

Senator ENGLE. That is true.

Senator JACKSON. If that should occur?

Senator ENGLE. That is correct. In other words, that is the minimum conditions, it seems to me, that ought to occur.

Senator JACKSON. Wouldn't it be wise, in view of the fact that we have two possibilities of an interconnection between the two areas—that is, the private utilities and the Federal system?

Senator ENGLE. Incidentally, let me add that I am not suggesting that private utilities not be put in a position to take some of this power, because the very nature of the load itself would indicate that perhaps that power could be disposed of beneficially to them. What I am objecting to is that they want to run the tollgate.

Senator ANDERSON. Yes; but just a minute ago you read that act and it said something about monopolistic practices. I understand you are in favor of throwing it open so public and private agencies can get part of it, but not to have private agencies get control of it.

Senator ENGLE. That is right.

Senator ANDERSON. Didn't you read "monopolistic"?

Senator ENGLE. Yes. It enjoins the Administrator to prevent the monopolization thereof by limited groups. He is authorized and directed to provide, construct, operate, and maintain.

Senator ANDERSON. That is the Bonneville Administrator?

Senator ENGLE. Yes, sir. That is exactly what this law says. They are doing exactly the opposite, in my opinion.

Senator JACKSON. To get back to this question, if there is to be an intertie by either an interconnection with private systems, with proper protection, or a Federal intertie, wouldn't it be wise that there be a thorough and a careful study of the feasibility of such an undertaking? I have in mind the situation that we have in the Northwest at the present time, which is an uncertain one; namely, the possibility of the development of upriver storage in Canada. We may find ourselves in a situation where we will not have this so-called dump power. It may be firmed up by upriver storage. Negotiations are underway with Canada. I am informed that very substantial progress is being made.

What I am getting at is this: Wouldn't it be wise that this whole matter be gone into thoroughly rather than just one approach?

Senator ENGLE. I could not agree with you more. If there is any way that the Bonneville power can be firmed up, a larger firm load would be available for utilization in the Bonneville area. The reason the Bonneville power is available the way it is is because they have what amounts to run-of-the-river plants. They don't have any storage up there. During the summer these great floods come down which make available large amounts of power which cannot be sold around the year, because it only occurs during the summer. Our suggestion is and my suggestion back in 1954 when I introduced this first bill was that an arrangement be made whereby that excess energy be sent down the Central Valley system, which would be paid for and which would help the Bonneville system pay out. Whatever arrangements are made, as I said before, should be made on the basis that we will take what is available. If it is not available, we don't take it.

Senator JACKSON. I appreciate your position. You have always been fair about this. What I am getting at is we do have some recent developments that might change the picture powerwise. I don't know. This depends on a lot of things. In addition, of course, I am hopeful at least—Senator Anderson has taken the lead in helping me—in

connection with the convertible reactor at Hanford, a dual-purpose reactor which will involve possibly 700,000 kilowatts of power. There are a lot of technical problems in connection with that. This particular project fits into this picture.

What I am getting at is that I think that from the standpoint of pure engineering—forget ideologies for the moment—it would be wise to give some consideration to a thorough study, Mr. Chairman, of both approaches, and get the engineering facts so that we can start from a point where I believe we will have the necessary information to see that a proper decision is made.

I want to commend you for your forthrightness and the objective approach you have taken.

I know that in the Northwest we run into some peculiar situations at times. We find opposition to an interconnection, that is, if it is a Federal interconnection. But if it is a private interconnection it is not discussed. I think that in the interest of objectively and without emotion, we ought to get all of the facts on the table to find out just exactly what can be done, Mr. Chairman. I do believe that we should get a lot of emotional factors in this matter, so that the real facts are obscured. My interest is in seeing to it that we have the facts, all of the facts, before the committee, and we do not have them available at this time. I think it would be unwise for the Bonneville Power Administration to undertake this contract in light of all the circumstances.

Senator ANDERSON. Apparently we are trying to find out, if we decide that, if we can do anything about it. If it does not take any Federal funds or any Federal approval, you have to have some other route than what we are meeting here today to do. If they pay no attention to the Bonneville Act, how are you going to stop them? We might get into court.

Senator JACKSON. Mr. Chairman, I would hope that if the committee takes action on this that the Bonneville Power Administration would respect the attitude of the committee or the Congress. I think they will. I will hazard that.

Senator ANDERSON. May I put into the record at this point the transmission agreement dated March 20, 1959.

(The document is as follows:)

TRANSMISSION AGREEMENT (EXCESS CAPACITY), THE UNITED STATES OF AMERICA, DEPARTMENT OF THE INTERIOR, ACTING BY AND THROUGH THE BONNEVILLE POWER ADMINISTRATOR AND THE CALIFORNIA OREGON POWER CO., PROVIDING FOR ELECTRIC SERVICE TO PACIFIC GAS & ELECTRIC CO.

INDEX

1. Term of agreement.
2. Transmission of power and amount.
3. Scheduling deliveries.
4. Credit for transfer of power.
5. Standard provisions.
Exhibit A (standard transfer of provisions (S. Tfr P, form 7)).

This TRANSMISSION AGREEMENT, executed _____, 1959, by the UNITED STATES OF AMERICA (hereinafter called the Government), Department of the Interior, acting by and through the BONNEVILLE POWER ADMINISTRATOR (hereinafter called the Administrator), and THE CALIFORNIA OREGON POWER CO., (hereinafter called Copco), a corporation organized and existing under the law of the State of California, WITNESSETH:

Whereas the parties hereto, on May 19, 1954, entered into an exchange and transfer agreement (designated as contract No. 14-03-001-10947) providing for

an exchange of firm power, the establishment of points of interconnection, scheduling arrangements, and other matters; and

Whereas Copco has interconnecting lines with Pacific Gas & Electric Co. (hereinafter called Pacific) and plans to construct a 230-kilovolt transmission line extending from Klamath Falls, Oreg., to a point in the State of California, where said 230-kilovolt transmission line will interconnect with the 230-kilovolt facilities to be constructed by Pacific; and

Whereas the Administrator and Pacific have entered into an agreement (designated as contract No. 14–03–001–) providing for the sale of interruptible power and provisional electric energy, emergency and breakdown relief, measurement and scheduling arrangements, and other matters; and

Whereas the Adiministrator desires Copco to make available (1) electric power and energy to Pacific which Government shall mage available to Copco for such purpose, and (2) electric energy to the Government which Pacific shall make available to Copoco; and

Whereas Copco is willing to transmit such electric energy to Pacific and to the Governemnt on the terms herein provided; and

Whereas the Administrator is authorized by order No. 2563, dated May 2, 1950, and order No. 2753, dated April 7, 1954, as amended, of the Secretary of the Interior to dispose of electric energy generated at various Federal hydroelectric projects in the Northwest pursuant to the specific statutory authority as to each of such projects designated in order No. 2753, as amended; and

Whereas the Administrator is authorized by law to enter into such contracts, agreements, and arrangements upon such terms and conditions and in such manner as he may deem necessary;

Now, therefore, the parties hereto mutually agree as follows:

1. *Term of agreement.*—Subject to the other provisions contained herein, each of the provisions of this agreement shall be effective for the term commencing at 12 p.m. on the date of execution and ending on the date of termination of said contract No. 14–03–001– .

2. *Transmission of power and amount.*—(*a*) Subject to the other provisions contained herein, Copco shall make available, during the term hereof—

(1) to Pacific, such amounts of electric power and energy as are made available by the Government to Copco at one or more of the points of interconnection specified in said contract No. 14–03–001–10947, for transmission to Pacific, and

(2) to the Government, at one or more of the points of interconnection specified in said contract No. 14–03–001–10947, such amounts of electric energy as are made available by Pacific to Copco for transmission to the Government.

(*b*) If Copco determines that it has excess energy available, from its system or from a balance in its favor in the exchange account established in said contract No. 14–03–001–10947, for disposition to Pacific during the term hereof, or that the capacity of the facilities used by Copco in making deliveries hereunder is insufficient to enable Copco to deliver the amount of electric power and energy made available to Copco by the Government or by Pacific hereunder, Copco shall be obligated to deliver hereunder only such amount as is specified by Copco.

3. *Scheduling deliveries.*—(*a*) The Government's dispatchers shall schedule for delivery to Copoco, during each hour of each calendar day in the term hereof, in accordance with subdivision (3) of subsection (*a*) of section 9 of said contract No. 14–03–001–10947, the amounts of electric power and energy to be made available by the Government to Pacific under the terms of said contract No. 14–03–001– . Such schedule shall be submitted to Copco's dispatcher, if possible, 12 hours prior to such calendar day.

(*b*) Copco shall, subject to the provisions of subsection (*b*) of section 2 hereof, schedule for delivery to Pacific in the applicable calendar day, the amounts of electric energy scheduled to Copco for such day, as provided in subsection (*a*) of this section.

(*c*) Copco will schedule for delivery to the Government during each calendar day, under subdivision (3) of subsection (*b*) of section 9 of said contract No. 14–03–001–10947, the amounts of electric energy to be made available by Pacific to the Government under the terms of said contract No. 14–03–001–10947.

4. *Credit for transfer of power.*—(*a*) For its services and the use of its facilities in making electric power and energy available hereunder, the Administrator will credit Copco in the exchange account established under said contract No.

14-03-001-10947, for each month in the term hereof, with the number of kilowatt-hours of electric energy which is equal to the product obtained by multiplying by the number of kilowatt-hours of electric energy delivered to Pacific for the account of the Government and to the Government for the account of Pacific hereunder during such month.

(*b*) The number of kilowatt-hours delivered to Pacific for the account of the Government for each month shall be the sum of the amounts scheduled in accordance with subsection (*a*) of section 3 hereof, unless the total number of kilowatt-hours registered by the meters described in section 4 of contract No. 14-03-001- for any hour is less than the scheduled amount for such hour, in which event the member of kilowatt-hours registered on such meters for such hour, adjusted for losses to the points of delivery specified in said section 4 of such contract, shall be substituted for the scheduled amount for such hour in determining the total number of kilowatt-hours delivered during such month.

(*c*) The number of kilowatt-hours delivered to the Government by Copco for the account of Pacific shall be determined from meters installed so as to measure the flow of electric energy between the systems of Copco and the Government, adjusted for losses to the points of delivery specified in section 4 of contract No. 14-03-001- —after first deducting from the metered amounts such amounts of electric energy as are scheduled by Copco from its system to the Government under any contracts other than this contract between Copco and the Government.

5. *Standard provisions.*—The standard transfer provisions (STfrP form-7), attached hereto as exhibit A, are hereby made a part of this agreement, except that, for the purposes of this agreement, the following sections shall not apply: 2, 3, 8, 10, and 11. Copco shall be the "transferor" mentioned in said exhibit A, and Pacific shall be the "transferee" therein mentioned.

In witness whereof, the parties hereto have executed this agreement in several counterparts.

UNITED STATES OF AMERICA,
DEPARTMENT OF THE INTERIOR.

[SEAL] By _____
Bonneville Power Administrator.

THE CALIFORNIA OREGON POWER COMPANY.

[SEAL] By _____

Attest:

_____

STANDARD TRANSFER PROVISIONS

(Wheeling over non-Government facilities)

INDEX

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1. *Interpretation.*—(*a*) The provisions in the document to which these standard transfer provisions are attached as an exhibit shall be deemed to be a part of this exhibit for the purpose of determining the meaning of any provision contained in this exhibit. If a provision in such document is in conflict with a provision contained in this exhibit, the former shall prevail.

(*b*) Nothing contained in this agreement shall, in any manner, be construed to abridge, limit, or deprive any party thereto of any means of enforcing any

remedy, either at law or in equity, for the breach of any of the provisions thereof which it would otherwise have.

2. *Definitions.*—As used herein: (*a*) the words "month" and "billing month" shall mean the period commencing at the time when the meters mentioned in this agreement are read by the Administrator and ending approximately 30 days thereafter when a subsequent reading of such meters is made by the Administrator;

(*b*) The words "30-minute integrated demand" shall mean the number of kilowatts which is equal to the product obtained by multiplying by two the number of kilowatt-hours delivered at any point during any clock half-hour.

3. Prior demands.—In determining any credit demand mentioned in, or money compensation to be paid to the transferor under, this agreement for any month, 30-minute integrated demands at which electric energy was delivered by the transferor for the account of the Government prior to the date upon which this agreement takes effect shall be considered in the same manner as if this agreement had been in effect.

4. *Measurements.*—Except as it is otherwise provided in section 7 of this exhibit, each measurement of each meter mentioned in this agreement shall be the measurement automatically recorded in writing by such meter, but if none, shall be the measurement of such meter as reported by the Administrator.

5. *Installation of and measurements by Government's meters.*—The Administrator may at any time install a meter of the Government to make the measurements required for any computation or determination mentioned in this agreement, and if so installed such measurements shall be used thereafter in such computations or determination.

6. *Tests of meters.*—Each party to this agreement will, at its expense, test its meters mentioned in this agreement at least once every 2 years, and if requested to do so by the other party will make additional tests or inspections of such meters, the expense of which will be paid by such other party unless such additional tests or inspections show such meters to be inaccurate as specified in section 7 of this exhibit. Each party will give reasonable notice of the time when any such test or inspection is to be made to the other party who may have representatives present at such test or inspection.

7. *Adjustment for inaccurate metering.*—(*a*) If any meter mentioned in this agreement fails to register, or if the measurement made by such meter during a test made as provided in this exhibit varies by more than 2 percent from the measurement made by the standard meter used in such test, adjustment shall be made correcting all measurements made by such inaccurate meter during the period hereinafter stated. Such corrected measurements shall be used to recompute the amounts of any electric energy to the made available, of any credits in an exchange energy account to be made, and of any money compensation to be paid, to the transferor as provided in this agreement, for (1) the actual period during which such inaccurate measurements were made if such period can be determined, or (2) if not, the period immediately preceding a test of such inaccurate meter which is equal to one-half the time from the date of the last preceding test of such meter: *Provided, however,* That the period for which such recomputations are to be made shall not exceed 6 months.

(*b*) If the credit theretofore made to the transferor in the exchange energy account varies from the credit to be made as recomputed, the amount of the variance will be credited in such exchange energy account to the part entitled thereto.

(*c*) If the money compensation theretofore paid to the transferor varies from the money compensation to be paid as recomputed, the amount of the variance will be paid to the party entitled thereto within 30 days after the recomputation is made: *Provided, however,* That the Government may deduct such amount due it from any money compensation which thereafter becomes due to the transferor under this agreement.

(*d*) If the amount of electric energy made available to the transferor by the Government under this agreement varies from the amount to be made available as recomputed, the amount of the variance will be credited in such exchange energy account to the party entitled thereto.

8. *Combining deliveries coincidentally.*—If it is provided in this agreement that the amounts of electric energy and reactive power, delivered at any point of delivery, and of the 30-minute integrated demands for such electric energy,

for any period, shall be the amounts thereof determined by combining deliveries at two or more metering points coincidentally:

(*a*) the amounts of such electric energy and reactive power so delivered at such point of delivery during such period shall be the respective sums computed by adding together the amounts of electric energy and reactive power, respectively, which flow during such period at such metering points, determined as provided in this agreement; and

(*b*) the amount of each 30-minute integrated demand for such electric energy at such point of delivery shall be the sum computed by adding together the integrated demands for such 30-minute period at such metering points, determined as provided in this agreement.

9. *Suspension of deliveries.*—The Administrator may, at any time, notify the transferor in writing to suspend the deliveries of electric energy provided for in this agreement to any transferee named in this agreement. Upon receipt of any such notice, the transferor will forthwith discontinue, and will not resume, such deliveries until notified to do so by the Administrator, and upon receipt of such notice from the Administrator to do so, will forthwith resume such deliveries.

If the operation of the transmission system of the transferor is suspended, interrupted, or interfered with as the result of the occurrence of any event which is reasonably beyond the transferor's control (including, but not limited to, the failure or breakdown of generating or transmission facilities, floods, fire, strikes, or acts of God or the public enemy), the transferor, its officers, agents, and employees shall not be obligated to deliver electric energy and reactive power to any transferee named in this agreement as provided in this agreement, during such time and to such extent as such suspension, interruption, or interference makes it reasonably impracticable to do so, and shall not be liable for any damages sustained by the Government or such transferee as a result of the failure to so deliver such electric energy and reactive power during such time. If deliveries of electric energy by the transferor hereunder are interrupted or reduced pursuant to this paragraph during any month, the credit in the exchange energy account which would otherwise be made, or the money compensation which would otherwise be paid, to the transferor shall be appropriately reduced.

10. *Power factor.*—(*a*) The formula for determining average power factor is as follows:

$$\text{Average Power Factor} = \frac{\text{Kilowatt-hours}}{\sqrt{(\text{Kilowatt-hours})^2 + (\text{Reactive kilovolt-ampere-hours})^2}}$$

In applying the above formula, the meter for measurement of reactive kilovolt-ampere-hours will be ratcheted to prevent reverse registration.

(*b*) When delivery of electric energy by the transferor at any point of delivery is commingled with any other class or classes of power and it is impracticable to separately meter the kilowatt-hours and reactive kilovolt-ampere-hours for each class, the average power factor of the total delivery of such electric energy for the month will be used, where applicable, as the power factor for each of the separate classes.

(*c*) Except as it is otherwise specifically provided in this agreement, no adjustment will be made for power factor at any point of delivery described in this agreement while the reactive power delivered at such point is not measured.

11. *Protection of the transferor.*—Protection is or will be afforded to the Government under some of the following provisions and conditions specified in each power sales contract executed or to be executed by the Administrator and each transferee named in this agreement: The power factor clause of the applicable Bonneville wholesale rate schedule and the subject matter set forth in the general contract provisions under the following titles, namely: Purchaser's Lines and Equipment; Purchaser's Responsibility for Government's Property; Right of Access; Continuity of Service; Changes in Load or Load Characteristics; Electrical Disturbances; Balancing of Loads; Adjustment for Unbalanced Phase Demands; Changes in Demands or Characteristics; Balancing Phase Demands: Permits; Ownership of Facilities; Purchaser's Facilities; and Inspection of Purchaser's Facilities.

As long as the transferor is delivering electric energy and reactive power for the account of the Government, as provided in this agreement, the transferor will be acting and regarding as an agent of the Government for the specific and sole purpose of making such deliveries; and such of the above-mentioned specified provisions and conditions as are contained in said contracts shall be effective for the transferor's protection and benefit as such agent and as such de-

liverer of electric energy and reactive power with the same force and effect as though the transferor were specifically named therein as the owner of facilities employed in making such deliveries.

12. *Permits.*—(*a*) If any equipment or facilities of a party to this agreement is, or is to be, located on the property of the other, a permit to install, test, maintain, inspect, replace, and repair during the term of this agreement, and to remove at the expiration of said term, such equipment and facilities, together with the right of ingress to and egress from the location thereof at all reasonable times in such term, is hereby granted by the other party.

(*b*) Each party shall have the right to read, at all reasonable times, any and all meters mentioned in this agreement which are installed on the property of the other.

13. *Ownership of facilities.*—(*a*) Ownership of any and all equipment, and of all salvageable facilities, installed by a party to this agreement, on the property of the other, shall be and remain in such party.

(*b*) Each party shall identify all movable equipment, and to the extent agreed upon by the operators of the parties, all other salvageable facilities which are installed by such party on the property of the other, by permanently affixing thereto suitable tags, stencils, stamps, or other markers plainly stating the name of the owner of property so identified.

14. *Nondiscrimination.*—In connection with the performance of any work under this contract, the transferor agrees not to discriminate against any employee or applicant for employment because of race, religion, color, or national origin, as provided in Executive Order No. 10479 of August 13, 1953, and Executive Order No. 10557 of September 3, 1954.

15. *Adjustment for change of conditions.*—If changes in conditions hereafter occur which substantially affect any factor required by this agreement to be used in determining any credit in an exchange energy account to be made, money compensation to be paid, or amount of electric energy or reactive power to be made available, to the transferor by the Government, or maximum replacement demand, or average power factor mentioned in this agreement, such factor will be changed in a manner which will conform to such changes of conditions. If an increase in the capacity of the facilities, being used by the transferor in making deliveries hereunder, is required at any time after execution of this agreement to enable the transferor to make the deliveries herein required together with those required for its own operations, the construction or installation of additional or other equipment or facilities for that purpose shall be deemed to be a change of conditions within the meaning of the preceding sentence.

If, pursuant to the terms of the agreement establishing such exchange energy account, another rate is substituted for the rate to be used in settling the balance in such account, the number of kilowatt-hours to be credited to the transferor in such account for each month as provided in this agreement, shall be changed for each month thereafter to the amount computed by multiplying such number of kilowatt-hours by 2.5 mills and dividing the resulting product by the currently effective substituted rate in mills per kilowatt-hour; *Provided, however,* That if any credit of "2 kilowatt-hours for each kilowatt-hour" delivered by the transferor is to be made in such account pursuant to the terms of this agreement, such credit shall not be so changed.

16. *Arbitration.*—If the parties to this agreement do not agree upon the amount of any adjustment to be made as provided in sections 7 and 9 of this exhibit or as to what constitutes a change in conditions which affects any factor referred to in section 15 of this exhibit, or as to what change, if any, should be made in such factor, a determination thereof will be made by a committee composed of a member appointed by the Administrator and a member appointed by the transferor. If such members are unable to agree upon a determination of the question in controversy, they shall appoint a third member who shall have no direct interest in the controversy. The determination of the question in controversy made by the committee, or a majority of its members, shall be binding on the parties to this agreement.

17. *Effect of this agreement.*—The transferor will not be entitled to any compensation for the electric energy and reactive power which it is obligated by this agreement to deliver, and which is delivered by it to any transferee named in this agreement, but the charges therefor will be computed and paid by such transferee in accordance with the provisions in the power sales contract executed or to be executed by the Administrator and such transferee.

18. *Performance by Administrator.*—The Administrator may, unless it is otherwise specifically provided in this agreement, perform any duty imposed on, or exercise any right vested in, him by this agreement, through or by such person or persons as he may designate for that purpose.

19. *Waiver of default.*—Any waiver at any time by any party to this agreement of its rights with respect to any default of any other party thereto, or with respect to any other matter arising in connection with such agreement, shall not be considered a waiver with respect to any subsequent default or matter.

20. *Interest of Member of Congress.*—No Member of or Delegate to Congress, or Resident Commissioner, shall be admitted to any share or part of this agreement or to any benefit that may arise therefrom, but this provision shall not be construed to extend to this agreement if made with a corporation for its general benefit.

Senator ANDERSON. Schedule C–4 which is apparently the rate of charges that will be obtained, and the general rate schedule provisions effective December 20, 1954.

(The documents referred to follow:)

BONNEVILLE POWER ADMINISTRATION

UNITED STATES DEPARTMENT OF THE INTERIOR

TRANSMISSION SYSTEM FIRM POWER

WHOLESALE POWER RATE SCHEDULE C–4

(Effective March 1, 1946)

(Amended December 20, 1954)

SECTION 1. *Availability.*—This schedule is available to purchasers of firm power delivered by the Administrator under appropriate contracts.

SEC. 2. *Rate.*—Power sold under this schedule shall be at the rate of $17.50 net per year per kilowatt of billing demand and shall be billed each month at one-twelfth of the yearly rate.

SEC. 3. *Minimum charge.*—The net minimum monthly charge for service under this schedule shall be one-twelfth of $17.50 per kilowatt of contract demand.

SEC. 4. *Billing demand.*—The billing demand shall be the highest of the following demands:

(1) The contract demand.

(2) The measured demand for the month, adjusted for power factor.

(3) The computed demand for the month, if part of the load is supplied from other sources (see sec. 2.3 of general rate schedule provisions).

(4) The highest measured or computed demand during the preceding 11 months, before adjustment for power factor.

SEC. 5. *Power factor adjustment.*—The adjustment for power factor specified in section 4 shall be made by increasing the measured demand for each month by 1 percent for each 1 percent or major fraction thereof by which the average power factor at which electric energy is supplied during such month is less than 0.85 lagging. This adjustment may be waived in whole or in part to the extent that the Administrator determines that a power factor of less than 0.85 lagging would in any particular case be advantageous to the Government. Unless specifically otherwise agreed, the Administrator shall not be obligated to deliver power to the purchaser at any time at a power factor below 0.75 lagging.

SEC. 6. *Rate adjustment.*—This rate schedule shall be subject to such adjustment as the Federal Power Commission may approve upon proposal by the Administrator to become effective on December 20 of the year 1956, or 1957, or 1958, provided that the Administrator shall make timely proposal for the adjustment, if adjustment becomes necessary, in order to bring the rate schedule into conformity with the rate standards of the Bonneville Project Act.

SEC. 7. *General provisions.*—Sales of power under this schedule shall be subject to the provisions of the Bonneville Project Act and the applicable general rate schedule provisions.

This schedule supersedes wholesale power rate schedule C–4 effective March 1, 1946.

WM. A. PEARL,
Bonneville Power Administrator.

BONNEVILLE POWER ADMINISTRATION

U.S. DEPARTMENT OF THE INTERIOR

GENERAL RATE SCHEDULE PROVISIONS

(Effective December 20, 1954)

(Amended May 15, 1956)

1.1 *Firm power.*—Firm power is power which the Administrator assures as being continuously available to a customer to meet his load requirements except when operation of the facilities used by the Government to serve the purchaser is suspended, interrupted, interfered with, or curtailed due to uncontrollable forces as defined herein, or because of necessary maintenance.

2.1 *Contract demand.*—The contract demand shall be the number of kilowatts that the Administrator agrees to have available for delivery to the purchaser under the conditions stated in the rate schedule. Any delivery of power in excess of contract demand shall in no event obligate the Administrator to continue to deliver power in excess of the contract demand.

2.2 *Measured demand.*—Except where deliveries are scheduled as hereinafter provided, the measured demand for any class of power, for any point of delivery, and for any period, shall be the largest of the 30-minute integrated demands at which such class of power is delivered to the purchaser at such point during such period. The Administrator, in determining the measured demand, will exclude any abnormal 30-minute integrated demands due to or resulting from emergencies, breakdowns, or maintenance of the Government's facilities. The class of power referred to above may include but is not restricted to firm, dump, experimental, testing, emergency, breakdown, and interruptible power.

If the contractual arrangements provide for the delivery of more than one class of power to the purchaser at any point of delivery the total 30-minute integrated demands at such point will be determined from measurements as specified in the contract, or estimated where metering or other data are not available for such determination. The portion of each of such demands assignable to each class of power will be determined according to the terms of the contract.

If the flow of electric energy to the purchaser at any point or points of delivery cannot be adequately controlled because the purchaser's system is interconnected with one or more systems which are also interconnected directly or indirectly with the Government's system, the purchaser's measured demand for each class of power, for such point or points, and for any period, shall be the largest of the hourly amounts of such class of power which are scheduled for delivery to the purchaser at such point or points during such period.

2.3 *Computed demand.*—A. The determination of computed demand for purchasers whose hydro generating facilities depend essentially upon daily usable streamflow, or for purchasers having only fuel-burning generating facilities, is made as follows:

(1) Determine for the billing month the capability of the purchaser's hydro generating facilities, both in terms of 30-minute peaking and of energy, under the water conditions which would have occurred during the same month in the critical year of record including modifications due to upstream storage operations. The determination will be made on the basis of the average daily usable streamflow in the critical year calculated separately for the first 10 days, the second 10 days, and the remainder of the month, respectively.

(2) Determine the capability, both in terms of 30-minute peaking and of energy, of the purchaser's fuel-burning generating facilities based on the most adverse fuel conditions reasonably to be anticipated and for which prudent operation would require provision to be made.

Limitation of fuel supply due to war or other extraordinary emergency will receive special treatment as required to conform to the basic purposes of the computed demand as stated above.

(3) Determine the firm peaking and energy capability available to the purchaser from other sources through purchase, lease, and exchange agreements.

(4) Determine the purchaser's assured capability for either peaking or energy by adding the capabilities determined in A (1), (2), and (3) above and deducting appropriate reserves.

(5) The computed demand for the month will be the greater of:

(*a*) The largest amount for any half hour by which the purchaser's actual system demand exceeds the purchaser's assured capability, or

(*b*) The largest amount during the month by which the purchaser's actual system average energy load for each 10-day period exceeds the purchaser's assured average energy capability for the corresponding 10-day period.

B. The determination of computed demand for purchasers having seasonal storage facilities (subsequently defined) is made as follows:

(1) Determine the 30-minute peaking and monthly energy capabilities of all nonstorage resources described in A (1), (2), and (3) above.

(2) Determine the monthly capabilities, both in terms of 30-minute peaking and of energy, of hydrogeneration facilities having seasonal storage, by relating total system resources to estimated monthly loads for the current operating year with storage utilized to provide the minimum peaking or energy requirement after deduction of adequate reserve generating capacity.

This determination will be made prior to the beginning of each operating year.

(3) The purchaser's assured monthly capability for either peaking or energy will be the total system resources less reserves, as determined in B (1) and (2) above.

(4) The computed demand for the month will be the greater of—

(*a*) The largest amount for any half hour by which the purchaser's actual system demand exceeds the purchaser's assured capability, or

(*b*) The purchaser's actual system average energy load for the month less the purchaser's assured average energy capability for the corresponding month.

Seasonal storage shall mean storage held over from the annual high-water season to the following low-water season in an amount sufficient to regulate the hydroenergy resources of the system to the system load requirements in a manner which would result in a uniform computed energy demand for a period of 1 month or more.

The use of computed demand as one of the alternatives in determining billing demand is intended to assure that each purchaser who purchases power from the Administrator to supplement his own facilities or other firm-power purchases will take a block of power substantially equivalent to the additional capacity which the purchaser would otherwise have to provide on the basis of normal and prudent o peration, viz., sufficient capacity to carry the load through the most critical water or other conditions reasonably to be anticipated, with an adequate operating reserve.

Since the computed demand depends on the relationship of capability of resources to system requirements, the computed demand for any month cannot be determined until after the end of the month. As each purchaser must estimate his own load, and is in the best position to follow its development from day to day, it will be his responsibility to request scheduling of firm power, including any increase over previously established demands, on the basis estimated by him to result in the most advantageous purchase of the power to be billed at the end of the month.

Each contract in which computed demand may be a factor in determining the billing demand shall have attached to it as for the period having the highest computed demand during the twelve months immediately preceding the effective date of the contract.

2.4 *Restricted demand.*—If at any time the Administrator notifies the purchaser that future delivery of power will be restricted, or restricts power delivery to a specific amount which he determines can be made available (not including temporary restrictions made necessary by emergency conditions) then, in determining subsequent bills such restricted demand shall be substituted for any higher ratcheted demand or current computed demand which would otherwise be applicable. This provision shall not be deemed to give the Administrator the right to restrict deliveries below contract demand.

3.1 *Administrator.*—The term Administrator means the Bonneville Power Administrator or such other department, agency, or official authorized by law to perform functions now performed by the Administrator, or any of their authorized agents.

4.1 *Character of service.*—Power and energy supplied hereunder shall be 3-phase alternating current at approximately 60 cycles per second, or such other type of service as may be available.

5.1 *Point of delivery and delivery voltage (effective May 15, 1956).*—Power and energy shall be delivered to each purchaser at such point or points and such voltage or voltages as are agreed upon by the Administrator and the purchaser. Delivery at more than one voltage shall constitute delivery at more than one point.

Unless otherwise specifically provided in the rate schedule, where service is rendered to a purchaser at more than one point of delivery, the service at each point of delivery shall be billed separately under the applicable rate schedule. Provisions for combined billing may be made in other cases, under conditions and terms specifically provided in the power sales contact, when (*a*) delivery at more than one point is advantageous to the Government, or (*b*) the flow of power at the several points of delivery is reasonably beyond the control of the purchaser.

In case service at more than one point of delivery is billed on a combined basis for the convenience of the customer, a charge will be made for the diversity of loads supplied at the several points of delivery. The charge for the diversity shall be determined in a uniform manner and shall be specified in the contract.

6.1 *Application of rates during initial operating period.*—In order to promote the development of new industries, the Administrator, for an initial operating period beginning with the commencement of operation of a new plant or major addition to an existing plant, and extending for such period as may be reasonably required by the character of the operation but not to exceed 3 months, may agree (*a*) to bill for service to such new plant or major addition on the basis of the maximum demand for each day, or (*b*) if such new plant or major addition is served by a distributor purchasing power therefor from the Administrator, to bill for that portion of such distributor's load which results from service to such new plant or major addition on the basis of the maximum demand for each day. The initial operating period may, with approval of the Federal Power Commission, be extended beyond the initial 3 months' period for such additional time as the character of operations may reasonably require. During such initial operating period such rate schedule provisions regarding contract demand, billing demand, and minimum monthly charge as are inconsistent with this section will be inoperative.

7.1 *Energy used for experimental and testing purposes.*—In order to promote experimentation in new processing methods and in development of new types of load within the market area, the Administrator, for such time as may be reasonably required by the character of the experimentation, but not to exceed 6 months from the date of initial service unless approval of the Federal Power Commission is first obtained, may sell the energy used solely for such experimentation in accordance with wholesale energy rate schedule H–3. Energy used solely for testing of new equipment or processes also may be sold by the Administrator under the same conditions as apply to experimental energy.

8.1 *Energy supplied for emergency and breakdown use.*—A purchaser taking firm power shall pay in accordance with wholesale energy rate schedule H–3 for any energy which has been supplied (*a*) for an emergency or breakdown use on the purchaser's system, or (*b*) following such emergency or breakdown to replace energy secured from sources other than the Government during such emergency or breakdown.

9.1 *Billing month.*—Meters will normally be read and bills computed at intervals of 1 month. A month is defined as an interval of approximately 30 days between normal meter-reading dates. If service is for less or more than the normal billing month, the monthly charges stated in the applicable rate schedule will be appropriately adjusted.

9.2 *Payment of bills.*—Bills for power shall be rendered monthly and shall be payable at the office of the Administrator. Failure to receive a bill shall not release the purchaser from liability for payment. If payment in full is not made on or before the close of business of the 30th day after the date of the bill, a delayed payment charge of 2 percent of the unpaid amount of the bill will be made except in the case of bills rendered under contracts with other agencies of the United States.

The Administrator may, whenever a power bill or a portion thereof remains unpaid subsequent to the 30th day after the date of the bill, and after giving 30 days' advance notice in writing, cancel the contract for service to the purchaser, but such cancellation shall not affect the purchaser's liability for any charges accrued prior thereto.

Remittances received by mail will be accepted without assessment of the 2 percent delayed payment charge provided the postmark indicates the payment was mailed on or before the 30th day after the date of the bill. If the 30th after the date of the bill is a Sunday or a holiday, the next following business day shall be the last day on which payment may be made without the addition of the delayed payment charge.

10.1 *Change from one rate schedule to another.*—Upon written request to the Administrator, any purchaser who has contracted for service under any rate schedule may change, at his option, to any other applicable rate schedule under an appropriate amendment to the contract, effective during the remainder of the original contract term. Only one such change will be permitted during the term of the original contract, other than changes resulting from the purchaser's option to substitute any applicable new rate schedule which may be filed by the Administrator. The change in rate will be made effective at the beginning of the first billing period following receipt of such request or at such later date as the request may stipulate. The billing factors established under the superseded rate schedule shall be applied if applicable, in computing bills under the newly elected rate schedule in the same manner as if they had been established under the newly elected rate schedule.

11.1 *Approval of rates.*—Schedules of rates and charges for electric energy sold to purchasers by the Administrator shall become effective only after confirmation and approval by the Federal Power Commission. Such rate schedules may be modified from time to time by the Administrator subject to confirmation and approval by the Federal Power Commission.

12.1 *Average power factor.*—The formula for determining average power factor is is follows:

$$\text{Average power factor} = \frac{\text{Kilowatt-hours}}{\sqrt{(\text{Kilowatt-hours})^2 + (\text{Reactive kilovolt-ampere-hours})^2}}$$

In applying the above formla, the meter for measurement of reactive kilovolt-ampere-hours will be ratcheted to prevent reverse registration.

When deliveries to a purchaser at any point of delivery include more than one class of power and it is impracticable to separately meter the kilowatt-hours and reactive kilovolt-ampere-hours for each class, the average power factor of the total deliveries for the month will be used, where applicable, as the power factor for each of the separate classes.

13.1 *Uncontrollable forces.*—The term "uncontrollable forces" means (*a*) strikes affecting the operation of the purchaser's works or system or other physical facilities upon which such operation is completely dependent, or of physical facilities used by the Government to serve the purchaser, or (*b*) events, reasonably beyond the control of the party having jurisdiction thereof, causing failure, damage, or destruction of such works, system, or facilities which by the exercise of reasonable diligence such party could not reasonably have been expected to avoid. Each party shall notify the other immediately of any defect, trouble, or accident which may in any way affect the delivery of power by the Government to the purchaser. In the event the operations of either party are suspended, interrupted, interfered with, or curtailed due to uncontrollable forces, such party shall exercise due diligence to reinstate such operations with all reasonable dispatch.

13.2 *Reduction in charges on account of interruptions.*—If operation of the customer's works or system or other physical facilities upon which such operation is completely dependent, or if operation of physical facilities used by the Government to serve the purchaser is suspended, interrupted, interfered with, or curtailed due to uncontrollable forces, as defined herein, or because of necessary maintenance on the Government's system, the charges for power shall be appropriately reduced. No interruption of less than 5 minutes duration will be considered for computation of such reduction in charges.

14.1 *Determination of estimated billing data.*—In cases where amounts of power and energy purchased by a distributor must be estimated from information on use of power by ultimate consumers of that distributor, the Administrator shall review the data on consumer use of power submitted by the purchaser, and if any changes are deemed necessary, will advise the purchaser of the changes proposed. In the event that agreement cannot be reached as to the estimate, a binding determination shall be made by a committee composed of one member appointed by the Administrator, one member appointed by the purchaser, and if necessary one member who shall have no direct interest to be selected by the two members so appointed.

15.1 *Sale of interruptible power.*—Interruptible power is power which the Administrator agrees to deliver except when curtailed by him upon reasonable notice. The wholesale power rate schedules applicable to the sales of firm power by the Administrator shall also apply to sales of interruptible power, subject to the following provisions:

A. The billing demand shall be the measured demand for the month, adjusted for power factor.

B. The minimum monthly charge for firm power included in such schedules shall not apply.

C. If the Administrator curtails or agrees at the request of the purchaser to curtail deliveries of interruptible power during any month:

(1) The rates per kilowatt and the energy blocks, if any, stated in the schedules shall be prorated according to the ratio of the time in each portion of the month during which the same restrictions were continuously in effect to the total time in the month, and

(2) The billing demand for interruptible power for such portion of the month shall be the measured demand during such portion of the month adjusted, pursuant to the applicable rate schedule, for the average power factor for the entire month.

D. Any contract which provides that the purchaser shall purchase a specified amount of interruptible power until firm power is substituted therefor when it becomes available for that purpose as provided in such contract, shall include a minimum billing demand for such interruptible power which shall apply except when deliveries thereof are curtailed by the Administrator below the specified amount to be purchased.

BONNEVILLE POWER ADMINISTRATION, U.S. DEPARTMENT OF THE INTERIOR

DUMP ENERGY—WHOLESALE ENERGY RATE SCHEDULE H–3

(Effective March 1, 1946; amended December 20, 1954)

SECTION 1. *Availability.*—This schedule is available to purchasers of dump energy delivered by the Administrator under appropriate contracts in cases in which the Administrator determines that the purchaser normally maintains electric generating facilities or has firm standby contracts or other sources of energy satisfactory to the Administrator sufficient to supply the purchaser's requirements when dump energy is not delivered. This schedule also applies to energy delivered for experimental and testing purposes and for emergency and breakdown use under the conditions set forth in sections 7.1 and 8.1, respectively, of the applicable general rate schedule provisions.

SEC. 2. *Delivery.*—Delivery of dump energy is not assured. The Administrator shall be the sole judge of whether and when dump energy will be delivered, and if delivered, the amount thereof.

In the event that the dump energy available to the Administrator is insufficient to supply the requirements of all purchasers thereof, the Administrator shall, in his sole discretion, designate the purchasers to whom such dump energy shall be delivered and the amount thereof to be delivered to each such purchaser.

SEC. 3. *Rate.*—Energy shall be sold under this schedule at 2.5 mills net per kilowatt-hour delivered.

SEC. 4. *Minimum charge.*—If it is necessary for the Government to install extra equipment or extra capacity for the purpose of delivering energy under this schedule, the contract for the sale of energy shall provide a minimum charge sufficient, in the judgment of the Administrator, to protect the Government from loss due to the installation of such extra equipment or extra capacity.

SEC. 5. *Rate adjustment.*—This rate schedule shall be subject to such adjustment as the Federal Power Commission may approve upon proposal by the Administrator to become effective on December 20 of the year 1956, or 1957, or 1958, provided that the Administrator shall make timely proposal for the adjustment, if adjustment becomes necessary, in order to bring the rate schedule into conformity with the rate standards of the Bonneville Project Act.

SEC. 6. *General provisions.*—Sales of power under this schedule shall be subject to the provisions of the Bonneville Project Act and the applicable general rate schedule provisions.

This schedule supersedes wholesale energy rate schedule H–3 effective March 1, 1946.

WM. A. PEARL,
Bonneville Power Administrator.

(GCP Form POU-10) (Draft 4-24-56)
[Effective 6-12-56]

GENERAL CONTRACT PROVISIONS

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RELATING TO MEANING

1. *Interpretation.*—(*a*) The provisions in the document to which these general contract provisions are attached as an exhibit shall be deemed to be a part of this exhibit for the purpose of determining the meaning of any provision contained in this exhibit. If a provision in such document is in conflict with a provision contained in this exhibit, the former shall prevail.

(*b*) Nothing contained in this contract shall, in any manner, be construed to abridge, limit, or deprive any party thereto of any means of enforcing any remedy, either at law or in equity, for the breach of any of the provisions thereof which it would otherwise have.

2. *Definitions.*—As used in this contract—

(*a*) the words "month" and "billing month" shall mean the period commencing at the time when the meters mentioned in this contract are read by the Administrator and ending approximately 30 days thereafter when a subsequent reading of such meters is made by the Administrator;

(*b*) the words "30-minute integrated demand" shall mean the number of kilowatts which is equal to the product obtained by multiplying by two the number of kilowatt-hours delivered at any point during any clock half hour;

(*c*) the word "transferor" shall mean a person who makes electric energy available to (1) the purchaser, or to another person for transmission to the purchaser, for the account of the Government, or (2) to the Government for transmission to the purchaser;

(*d*) the Government's "system" or "facilities" shall include facilities owned by the Government and those which the Government may use under lease, easement, or license.

RELATING TO COMPUTATION OF CHARGES

3. *Commencement of payments.*—The obligation of the purchaser to make the payments provided for in the applicable rate schedule with respect to each point of delivery under this contract shall commence at the time of initial delivery at such point stated in this contract.

4. *Prior demands.*—(*a*) If the Government has delivered electric energy to the purchaser, at any point of delivery specified in this contract prior to the time this contract takes effect, the purchaser's measured demands, and computed demands, if any, at such point, prior to such time shall be considered for the purpose of determining the amount due from the purchaser for the electric energy delivered under this contract, during any month in the term thereof, in the same manner as if this contract had been in effect.

(*b*) If the Government has delivered electric energy to the purchaser at any point of delivery specified in this contract or in any previous contract with the purchaser, and such point of delivery is superseded by another point of delivery specified in this contract, the purchaser's measured demands, and computed demands, if any, at such superseded point, shall be considered for the purpose of determining the amount due from the purchaser for the electric energy delivered under this contract at such superseding point.

5. *Reports.*—The purchaser will furnish the Government such information as is necessary for making any computation required for the purposes of this contract, and the parties will cooperate in exchanging such additional information as may be reasonably useful for their respective operations.

6. *Measurements.*—Except as it is otherwise provided in section 7 of this exhibit, each measurement of each meter mentioned in this contract shall be measurement automatically recorded in writing by such meter, but if none, shall be the measurement of such meter as reported by the Administrator.

7. *Adjustment for inaccurate metering.*—If any meter mentioned in this contract fails to register, or if the measurement made by such meter during a test made as provided in this exhibit varies by more than 2 percent from the measurement made by the standard meter used in such test, adjustment shall be made correcting all measurements made by such an inaccurate meter for (1) the actual period during which such inaccurate measurements were made if such period can be determined, or (2) if not, the period immediately preceding the test of such meter which is equal to one-half the time from the date of the last preceding test of such meter: *Provided, however,* That the period during which such correction is to be made shall not exceed 6 months. Such corrected measurements shall be used to recompute the amounts due from the purchaser for the electric energy made available under this contcart during such period. If the total amount due from the purchaser for such period as recomputed varies from the total amount due as theretofore computed, the amount of the variance shall be paid to the party entitled thereto within 30 days after the recomputation is made.

8. *Effect of reduction of contract demand.*—If the purchaser's contract demand is specified herein in kilowatts and is hereafter reduced, the prior measured or computing demands, if any, of the purchaser shall, for the purpose of computing charges for electric energy delivered thereafter, be reduced by the amount of such reduction.

9. *Reducing charges for interruptions.*—If delivery of electric energy under this contract is interrupted or reduced at any point of delivery pursuant to section 16 of this exhibit, the amount, which would otherwise be due from the purchaser for the electric energy made available at such point during the month in which such interruption or reduction occurs, shall be appropriately reduced.

10. *Adjustment for unbalanced phase demands.*—If the purchaser fails to make promptly the changes mentioned in section 21 of this exhibit, the Government may determine the registered demand of the purchaser, at the point of delivery in question during each month thereafter until such changes are made, to be equal to the product obtained by multiplying by three the largest of the 30-minute integrated demands of the purchaser on any phase at such point during such month. This section shall not apply with respect to any point of delivery where the current required to be supplied at such point is other than three-phase current.

11. *Combining deliveries coincidentally.*—If it is provided in this contract that charges for electric energy made available at two or more points of delivery will be made by combining deliveries at such points coincidentally:

(*a*) the measured demand to be considered in determining the billing demand for each month shall be the largest sum obtained by adding for each 30-minute period of the month the 30-minute integrated demands of the purchaser at all such points: *Provided, however,* That the amount of any abnormal nonrecurring demands resulting from emergency conditions or causes reasonably beyond the purchaser's control, will be eliminated therefrom;

(*b*) the number of kilowatt-hours to be used in determining the energy charge, if any, and the average monthly power factor at which electric energy is delivered at such points under this contract, during such month, shall be the sum of the amounts of electric energy delivered at such points under this contract during such month; and

(*c*) the number of reactive kilovolt-ampere-hours to be used in determining such average monthly power factor shall be the sum of the amounts of reactive power delivered at such points under this contract during such month.

12. *Power factor adjustment.*—Except as it is otherwise specifically provided in this contract, no adjustment will be made for power factor at any point of delivery defined in this contract while the reactive power delivered at such point is not measured.

13. *Assignment of total integrated demand to classes of power.*—If this contract provides for supplying dump or emergency energy to the purchaser, the integrated demand for dump and emergency energy for any 30-minute period during which deliveries of electric energy by the Government to the purchaser are not limited by the Administrator to a smaller amount shall be the number of kilowatts, if any, by which the integrated demand for the half-hour exceeds the largest of such of the following as are billing demand factors under the firm power rate schedule specified in this contract: (*a*) the contract demand for the month; (*b*) the computed demand for the month; (*c*) the highest measured or computed demand during the preceding 11 months. The remainder of such total integrated demand shall be the integrated demand for firm power and interruptible power, if any, for such half-hour.

RELATING TO RATES

14. *New rates.*—If the Administrator at any time during the term of this contract, files with the Federal Power Commission a new rate schedule which by its terms is available for the class and quality of service covered by this contract, he will, within 30 days after confirmation and approval of such rate schedule by the Federal Power Commission, give written notice thereof to the purchaser together with a copy of such rate schedule. At any time after such filing the purchaser may, in writing, request the Administrator to substitute such rate schedule for the rate schedule in effect under this contract. Such substitution shall be effective at the beginning of the first billing month following such approval, if such request is received prior to such approval, but if not, such substitution shall be effective at the beginning of the first billing month following that in which such request is received.

15. *Equitable adjustment of rates.*—(*a*) As used in this section, the words "rate adjustment date" shall mean each of the following dates: December 20, 1954, and each and every quinquennial anniversary thereof.

(*b*) Except as it is otherwise provided in section 14 of this exhibit the purchaser shall pay the Administrator for the electric energy made available under this contract during the 5-year period commencing on each rate adjustment date in the term of this contract, at the rate specified in any rate schedule available at the beginning of such period under new contracts for service of the class, quality, and type provided for in this contract, and in accordance with the terms thereof and the general rate schedule provisions incorporated or referred to in such rate schedule, subject to the following provisions:

(1) if more than one rate schedule for such service is available at the beginning of such period, the purchaser shall determine which of the several rate schedules shall apply under this contract during such period, and

(2) if a rate in excess of the rate in effect at the time this contract is executed becomes effective under this contract, the purchaser may, by giving written notice to the Administrator at any time within 60 days from the time such increased rate becomes effective, terminate this contract at such time after said notice is given as is specified in such notice.

RELATING TO DELIVERY OF POWER

16. *Continuity of service.*—The Government may temporarily interrupt or reduce deliveries of electric energy to the purchaser if the Administrator determines that such interruption or reduction is necessary or desirable in case of system emergencies, or in order to install equipment in, make repairs, replacements, investigations, and inspections of, or perform other maintenance work on, the Government's electric system. Except in case of emergency, and in order that the purchaser's operations will not be unreasonably interfered with, the Administrator will give the purchaser notice of any such interruption or reduction, the reason therefor, and the probable duration thereof.

17. *Conservation of natural resources.*—The Government will not be obligated to deliver power pursuant to this contract whenever, in the judgment of the Administrator, the purchaser's plants or operations would harm or detract from the scenic beauties of the Columbia River Gorge, or the waste products from such plants or operations would harm or destroy the fish or other aquatic life or otherwise pollute the waters of drainage basins of the Pacific Northwest.

18. *Delivery by transfer.*—If it is provided in this contract that delivery to the purchaser at any point of delivery will be made by transfer over the facilities of a transferor or transferors, the Government shall be obligated to make available to the purchaser at such point only such amounts of electric energy as are made available to the purchaser by such transferor or transferors at such point, and the obligation of the Government to make electric energy available to the purchaser at such point shall be in all respects subject to all provisions contained in the agreement or agreements executed, or to be executed, if not already in effect, by the Administrator and such transferor or transferors requiring such transfer.

RELATING TO USE OF POWER

19. *Changes in demands or characteristics.*—The purchaser will, whenever possible, give reasonable notice to the Administrator of any unusual increase or decrease of its demands for electric energy on the Government's system, or of any unusual change in the load factor or power factor at which the purchaser will take delivery of electric energy under this contract. The purchaser shall be liable for any damage to the Government's system which results from any such increase, decrease, or change made without the Administrator's consent.

20. *Electric disturbances.*—The purchaser will not use the energy delivered under this contract in such manner as to cause electric disturbances which may be reasonably expected to (*a*) cause damage to the Government's system or to systems connected with the Government's system, or (*b*) prevent the Administrator from serving other purchasers satisfactorily.

21. *Balancing phase demands.*—The Administrator may, at any time during the term of this contract, require the purchaser to make such changes of its system as are necessary so that the purchaser's 30-minute integrated demands on one phase at any point of delivery for any half-hour shall not exceed the integrated demand on any other phase at such point for the same half-hour by more than 10 percent. This section shall not apply with respect to any point of delivery where the current required to be supplied at such point is other than three-phase current.

RELATING TO FACILITIES

22. *Installation of and measurements by Government's meters.*—The Administrator may at any time install a meter or metering equipment of the Government to make the measurements required for any computation or determination mentioned in this contract, and if so installed such measurements shall be used thereafter in such computation or determination.

23. *Tests of meters.*—Each party to this contract will, at its expense, test its meters mentioned in this contract at least once every 2 years, and, if requested to do so by the other party, will make additional tests or inspections of such meters, the expense of which will be paid by such other party unless such additional tests or inspections show such meters to be inaccurate as specified in section 7 of this exhibit. Each party will give reasonable notice of the time when any such test or inspection is to be made to the other party who may have representatives present at such test or inspection.

24. *Permits.*—(*a*) If any equipment or facilities of a party to this contract is, or is to be by the terms of this contract, located on the property of the other, a permit to install, test, maintain, inspect, replace, and repair during the term of this contract, and to remove at the expiration of said term, such equipment and

facilities, together with the right of ingress to and egress from the location thereof at all reasonable times in such term, is hereby granted by the other party.

(*b*) Each party shall have the right to read, at all reasonable times, any and all meters mentioned in this contract which are installed on the property of the other.

25. *Ownership of facilities.*—(*a*) Ownership of any and all equipment, and of all salvageable facilities, installed by a party to this contract on the property of the other, shall be and remain in such party.

(*b*) Each party shall identify all movable equipment and, to the extent agreed upon by the operators of the parties, all other salvageable facilities which are installed by such party on the property of the other, by permanently affixing thereto suitable tags, stencils, stamps, or other markers plainly stating the name of the owner of the equipment and facilities so identified.

26. *Purchaser's facilities.*—The purchaser will, at its expense, install such equipment as is necessary to limit the electric disturbances described in section 20 of this exhibit. All electric facilities installed by the purchaser and connected with the Government's system shall conform to accepted modern practice and applicable State regulations, or, in the absence of applicable State regulations, to the specifications, rules, and regulations contained in the latest editions of, and supplements to, the National Electric Safety Code of the U.S. Bureau of Standards.

27. *Inspection of purchaser's facilities.*—The Government may, but shall not be obligated to, inspect the purchaser's electric installation at any time, but such inspection, or failure to inspect, shall not render the Government, its officers, agents, or employees, liable or responsible for any injury, loss, damage, or accident resulting from defects in such electric installation, or for violation of this contract.

REQUIRED BY STATUTE IN CONTRACTS FOR CONSTRUCTION

28. *Eight-hour law and overtime compensation.*—(*a*) If it is provided herein that the purchaser will construct or install any facilities, no laborer or mechanic doing any part of the work contemplated by this contract in the employ of the purchaser or any subcontractor contracting for any part of said work contemplated, shall be required or permitted to work more than 8 hours in any 1 calendar day upon such work, except upon the condition that compensation is paid to such laborer or mechanic in accordance with the provisions of this section.

(*b*) The wages of every such laborer and mechanic so employed by the purchaser, or any subcontractor engaged in the performance of such work, shall be computed on a basic day rate of 8 hours per day and work in excess of 8 hours per day is permitted only upon the condition that every such laborer and mechanic shall be compensated for all hours worked in excess of 8 hours per day at not less than one and one-half times the basic rate of pay. For each violation of the requirement of this section a penalty of $5 shall be imposed upon the purchaser for each laborer or mechanic for every calendar day in which such employee is required or permitted to labor more than 8 hours upon said work without receiving compensation computed in accordance with this section, and all penalties thus imposed shall be paid upon demand to the Government for its use and benefit: *Provided, however,* That this stipulation shall be subject in all respects to the exceptions and provisions of U.S. Code, title 40, sections 321, 324, 325, 325a, and 326, relating to hours of labor and compensation for overtime.

29. *Convict labor.*—The purchaser shall not employ any person undergoing sentence of imprisonment at hard labor.

MISCELLANEOUS PROVISIONS

30. *Nondiscrimination.*—In connection with the performance of any work under this contract, the purchaser agrees not to discriminate against any employee or applicant for employment because of race, religion, color, or national origin, as provided in Executive Order No. 10479 of August 13, 1953, and Executive Order No. 10557 of September 3, 1954.

31. *Joint studies.*—Representatives of the parties hereto will collaborate in joint studies from time to time to forecast the electric energy requirements of the purchaser which are to be supplied under this contract, and to plan the facilities which are required to assure the most efficient mutual operations.

32. *Adjustment for change of conditions.*—If changes in conditions occur which substantially affect any factor, agreed upon by representatives designated

by the parties to this contract, for use in making adjustment for losses in transmission or transformation, if any, such factor will be changed in a manner which will conform to such changes in conditions.

33. *Arbitration.*—If the parties to this contract do not agree on the determination of any question of fact hereinafter stated, a determination thereof will be made by a committee composed of a member appointed by the Administrator and a member appointed by the Purchaser. If such members are unable to agree upon a determination of such question they shall appoint a third member who shall have no direct interest in the controversy. The determination of such question made by the committee, or a majority of its members, shall be binding on the parties.

The questions of fact to be determined as provided in the preceding paragraph shall be: the correction of the measurements to be made as provided in section 7 of this exhibit; the amount of reduction in charges mentioned in section 9 of this exhibit; whether the changes mentioned in section 10 of this exhibit were made "promptly"; whether an abnormal nonrecurring demand occurred and the amount and time thereof; any fact mentioned in the first sentence of section 19, and in sections 20 and 21 of this exhibit; whether the arrangements made by the purchaser comply with section 26 of this exhibit; and whether changes in conditions mentioned in section 32 of this exhibit have occurred, and if so, the change to be made in the factor therein mentioned.

34. *Enforcement of rights for benefit of transferors.*—If delivery of electric energy under this contract is to be made by transfer over the facilities of any transferor or transferors, the Government may enforce its rights under the power factor clause of the Bonneville wholesale power rate schedule incorporated in this contract, and under sections 10, 16, 19, 20, 21, 24, 25, 26 and 27 of this exhibit for the benefit of such transferor or transferors and all references to the Government's system property, or facilities in said sections shall be deemed to include the facilities of the transferor or transferors being used to deliver electric energy and reactive power to the purchaser for the account of the Government or to the Government for transmission to the purchaser.

35. *Assignment of contract.*—This contract shall inure to the benefit of, and shall be binding upon the respective successors and assigns of the parties to this contract: *Provided, however,* That neither such contract nor any interest therein shall be transferred or assigned by either party to any party other than the United States or an agency thereof without the written consent of the other.

36. *Waiver of default.*—Any waiver at any time by any party to this contract of its rights with respect to any default of any other party thereto, or with respect to any other matter arising in connection with such contract, shall not be considered a waiver with respect to any subsequent default or matter.

37. *Notices and computation of time.*—Any notice required by this contract to be given to any party shall be effective when it is received by such party, and in computing any period of time from such notice, such period shall commence at 12 p.m. on the date of receipt of such notice.

38. *Interest of Member of Congress.*—No Member of, or Delegate to Congress, or Resident Commissioner shall be admitted to any share or part of this contract or to any benefit that may arise therefrom. Nothing, however, herein contained shall be construed to extend to such contract if made with a corporation for its general benefit.

Senator ANDERSON. Have you completed your statement, Senator Engle?

Senator ENGLE. Yes, sir.

Senator ANDERSON. Senator Kuchel.

Senator KUCHEL. My only comment is that I think this committee performs a service in the interest of the people. It may well be that the statutory right of the Bonneville Power Administration to contract away its surplus power is without any legal question whatsoever. But there is a serious policy involved which bears heavily upon the interests of this committee, and I think the Congress as a whole. I need not recall to this subcommittee, because we had testimony on it just a couple of weeks ago in connection with the San Luis legisla-

tion, that the people of the State of California are confronted with the possibility—perhaps I may say the probability—of an eventual expenditure of some $11 billion with respect to water projects. As the Governor of California has indicated in letters to the Governor of Oregon and the Governor of Washington, it could conceivably be that the power that is generated at Bonneville but which is surplus to the needs of that area, or which conceivably would be surplus to the needs of that area in the days to come could be utilized by the people and the government of California, with respect to the pumping requirements of the government of California in distributing water to the arid portions of that State. So I want to read into the record a portion of the comments which Governor Brown of my State has made under date of April 1 to his colleague in our two neighboring Pacific coast States:

> Because of the large amounts of surplus energy that will be needed in our water program because the Northwest surplus may solve the problem, I believe any premature stopgap measure might detour the States from proceeding later on a basis which would provide for maximum use of these power resources. That is why I would not favor the proposed agreement between the Bonneville Power Administration and the Pacific Gas & Electric Co. until and unless the three State study shows that it is definitely a desirable part of a larger job that must be done.

In keeping with that paragraph, I think my colleagues on this subcommittee will agree with me that first we want a clear picture of what the proposed contract does. We want a clear picture of the legal situation under which a Federal agency in the neighboring State can dispose of surplus energy. As my colleague from California said, there is no desire on the part of my State to arrogate to itself that which in good conscience should go to Oregon or to Washington. That whole thing from a legal standpoint ought clearly to be made a part of this record. Premature stopgap measures which the Governor of California suggests I would like to know in so many words from the representatives of the Department of Interior what precisely was the basis of the negotiation, what took place, and how this proposed agreement has been fashioned.

I would like to know whether or not the Department of Interior would recognize the views which this committee might undertake to enunciate and if the Department does have the right to control the Bonneville Administration, whether the Department would consider the views of this committee with respect to the policy involved in the contract agreement.

I want this question of the preference clause clearly established as a part of this hearing, Mr. Chairman, so that we can understand precisely what we are talking about with respect to any municipalities in my State which might evince an interest in this surplus power situation. I think it is a good thing you are having this hearing and I hope we develop those facts fully and completely.

Senator ANDERSON. Senator Engle, there is one other question. Had you though of the possibility of the system of legislative riders that we had to use once or twice in the House of Representatives where we said no part of this appropriation shall be paid to any person who does so and so. That might straighten out the situation quickly. I had not thought of that, but there is a way of controlling it if there seems to be a violation.

There is a statement from Lee Wooden, president of the Oregon Rural Electric Cooperative Association, on a proposal for intertie between the Columbia River power system and the Central Valley project. Without objection, that will be made part of the record at this point.

(The document referred to follows:)

STATEMENT OF LEE WOODEN, PRESIDENT, OREGON RURAL ELECTRIC COOPERATIVE ASSOCIATION, ON THE PROPOSAL FOR AN INTERTIE BETWEEN THE COLUMBIA RIVER POWER SYSTEM AND THE CENTRAL VALLEY PROJECT

The Oregon Rural Electric Cooperative Association consists of 15 member electric cooperative systems in the State of Oregon, which together have a total of 33,000 individual members, representing over 100,000 people in the State of Oregon.

Our members have a great and direct stake in the decision to build a transmission line from the Columbia Basin area to the State of California. By resolution adopted at our last annual meeting on December 9 and 10, 1958, the association endorsed the construction of such a line. The resolution is as follows:

"We urge immediate and full investigation and preparation of plans looking toward the earliest feasible construction of one or more high-voltage lines to interconnect the Columbia River power system and the Central Valley project."

Our annual meeting adopted another resolution, related to that above, which gives one of our reasons for supporting the construction of an intertie to the State of California:

"We urge the Bonneville Power Administration to conduct the fullest feasible investigation of its power marketing outlook for the next 10 years, including the sale of secondary power in Canada, southern Idaho, Utah, and California, as well as to interruptible loads in the Northwest, and that the BPA study the effect of proposed upstream storage dams on its firm power capability, and that it also study the possibility of revising its present method of computing the computed demand, all to the end that every effort be made to retain substantially the present level of BPA wholesale power rates."

We are interested not only in having such an intertie built, we are vitally concerned that the terms of its construction be in the best interests of our members, as well as in the best public interest.

Briefly, we are opposed to the construction of a California intertie by any private electric utility and urge that this committee suspend negotiations between Bonneville Power Administration and Pacific Gas & Electric Co. which would enable P. G. & E. to build transmission lines to the Northwest. We are wholeheartedly in favor of appropriations for a study by the Bonneville Power Administration and the Bureau of Reclamation on the feasibility of the construction of a Federal high-voltage transmission line to the Central Valley project in California. We are confident that such a line will prove feasible, and that it is already desirable from the standpoint of securing an outlet for surplus power from the Columbia River system.

If a decision should be made to construct a Federal intertie, we would want to make sure that marketing agreements with California limited the sale of Columbia River power to power that is definitely surplus after all Northwest needs are met. Favorable marketing agreements for the disposal of surplus power will be to the great advantage of our electric systems, which are wholly dependent upon Federal wholesale power supplies, by assuring that wholesale power costs to Northwest users can be kept at their present low rates. Since this hearing is to be limited to consideration of negotiations for private construction of the intertie and to suggested appropriations for a Federal feasibility study, we wll not elaborate at this time on the protective provisions that we feel should be attached to construction of a Federal transmission line.

I. *We are opposed to the private construction and operation of a high-voltage transmission system.*—As noted above, our 15-member electric systems in the State of Oregon are all totally dependent upon the Federal Columbia River power system for their wholesale power supplies.

Our rural electric cooperatives serve a definite antimonopoly function, in the public interest, in addition to providing power service to rural areas in the State of Oregon that were not served by private electric utilities prior to our organization. In creating the Rural Electrification Act and the Bonneville

Power Act, Congress took into account the valuable contribution electric cooperatives could and would make in controlling the monopolization of the electric power industry by a few large and tightly organized private concerns. Through these acts, Congress provided the means—low-cost loans and the preference clause—for enabling the electric cooperatives to hold their own against the much greater economic power of the privately held companies. The result of these actions by Congress has been to secure for the people of our region the benefits of low-cost electric power. Customers of commercial power companies have benefited in substantial ways from the competition our cooperatives have provided to their power suppliers.

It is our firm opinion that construction of a transmission network from California by the Pacific Gas & Electric Co. for the purpose of obtaining surplus Federal power from the Bonneville Power Administration would be in violation of the spirit of the antimonopoly clause in the Bonneville Act. Furthermore, we feel that private construction would gravely weaken our cooperatives by opening up the possibility that they might be dependent on the good graces of the operators of privately held transmission lines for future power supplies. This would not only violate the spirit of the antimonopoly laws, it would make those laws completely ineffective as far as we are concerned.

Here in Oregon we have had direct experience with dependence on private power transmission of electric energy. We are not exaggerating when we say that the private utilities are able to find ample reasons for charging exorbitant wholesale rates to our cooperatives, far beyond the rates charged us by Bonneville Power Administration.

Oregon cooperatives are in a special position to object to construction by Pacific Gas & Electric of the California intertie, because the necessary transmission lines would be built right through our State. It is not only conceivable—it is likely—that our systems would have need to resort to the use of such an intertie for our own purposes at some future date, either for the disposal of surplus or for obtaining emergency power supplies.

II. *The construction of a Federal intertie is in the public interest and in the interest of our cooperatives.*

1. Disposal of surplus Bonneville power supplies will help to keep wholesale rates to power users in the Pacific Northwest at the current level. At the present time Bonneville Power Administration has surplus power in the summer months which could be used in the Central Valley system. If all of this power could be sold when it is surplus, the revenues added to the Bonneville system would more than compensate for higher production costs which BPA is using as an excuse to threaten higher wholesale rates to our consumers.

2. The construction of a Federal intertie from the Bonneville power system to the Central Valley project in California will be a major experiment in interregional transmission of power. In the future, especially, interregional power grids will be of increasing importance to our economic growth and national security.

3. Construction of a Federal transmission line to the Central Valley project in California will enable the people of California to determine whether they want other forms of electric power distribution than they now have. This principle of self-determination which underlies all Federal power law is as applicable to the people of California as it is to the people of the Pacific Northwest and for this reason we support it as a matter of principle. It is our view that Federal control of such an interregional transmission grid will serve as important antimonopoly function in the State of California by bringing the preference clause into play over the sale of surplus Federal power in that State. It is evident that were Pacific Gas & Electric Co. to construct the line to the Columbia River power system, the preference provision could not adequately nor economically be brought into use in California.

4. Finally, we are confident that the study this committee authorizes will show that Federal construction of a high-voltage transmission line to the Central Valley project will be economically feasible and that Federal construction will be to the economic advantage of all participants (including Pacific Gas & Electric Co.) in the disposal of surplus Columbia River power. We are confident that comparative analyses will indicate that Federal construction of the transmission line will result in lower cost power to all users, both public and private, than will private construction and operation.

Senator ANDERSON. Senator Neuberger.

STATEMENT OF HON. RICHARD L. NEUBERGER, A U.S. SENATOR FROM THE STATE OF OREGON

Senator NEUBERGER. Senator Anderson, I want to thank you and your associates on the Irrigation and Reclamation Subcommittee for holding this hearing, and, of course, for giving me an opportunity to testify along with my distinguished colleague from California.

Mr. Chairman and members of the subcommittee, the hearing today on a transmission line intertie between electric power producing facilities of the Pacific Coast States reminds me of the vast benefits achieved in the Columbia River Basin through the pooling of energy sources. Under the pressures of wartime mobilization, arrangements were worked out between the Bonneville Power Administration and private and publicly owned utilities of the region to establish the Pacific Northwest Power Pool. This pooling of power, with the Bonneville transmission grid serving as a backbone, made possible an enormous saving of kilowatts through integration of generating facilities and diversity of powerloads. Net effect of the pooling was to create a firm power supply roughly equivalent to adding another Bonneville Dam to the regional power supply.

The proposal for a transmission intertie between Northwest and California power outlets, in my opinion, provides another such opportunity for sound conservation of natural resources. I have been informed that the Bonneville Power Administration lost about 15 percent of the power capability of Federal dams on the Columbia during the year that ended last June 30. Most of this was interruptible power which would have had a value exceeding $11 million if a market had existed for the energy. During this period of wasted waterpower in the Northwest, thousands of barrels of oil were being burned in California steam generators to firm up the energy supply in that area. Because oil is a depletable resource, it becomes quite clear that lack of a transmission intertie between California and the Pacific Northwest is causing double waste of our Nation's natural assets. Oil is burned to create kilowatts in California while energy of the mighty Columbia pours unused over the spillways. Although wo do not face the wartime emergency which led to creation of the Northwest Power Pool, present-day challenges are no less acute. I hope that information will be developed at his hearing to provide the basis for a transmission interconnection which will enhance conservation objectives in both California and the Pacific Northwest. The entire Nation would gain by such an achievement.

Mr. Chairman, I would like to point out several other things which seem to me pertinent to this hearing.

To begin with, there is in contemplation at the present time, although I hope it does not materialize, a rate increase for Bonneville power. It seems to me that one of the factors in this possible rate increase is the fact that interruptible power has had to go to waste. This interruptible power could have been sold in California, as I mentioned in my prepared testimony, for about $11 million. I think the income from that would have obviated much of the talk we now hear of a rate increase. If I am not mistaken, during the last fiscal year Bonneville for the first time fell behind from a fiscal standpoint. Therefore, it is obvious that the sale of this interruptible power would

have been important either to delaying or preventing for an indefinite period of time any increase in the basic Bonneville rate of $17.50 per kilowatt-year.

Mr. Chairman, for many years this whole possibility of sending power from the Pacific Northwest to California has festered along the Pacific seaboard. It has been an issue on which a great deal of demagoguery has occurred. At times in the Pacific Northwest you would have thought California was not only a different country, but a country with which we actually were having hostilities when talk was heard about sending power to the State of California. I remember at times we have heard a lot of demagoguery that this will mean we will lose all our water to the State of California. In addition, we have heard all kinds of charges about the fact that California would milk off all our power and that we would have none left in the Pacific Northwest. I think that much of this hostility to California, and of course a great deal of it has been generated synthetically, resulted, if I am not mistaken, in 1954 in the sale of a Federal transmission line which would have been a bridge between California and the Pacific Northwest to a private utility company. This indicates to what degree this entire issue has been inflamed at various times in our region.

I just want to say as one of the Senators in the Pacific Northwest, I do not regard California from any hostile standpoint. I am aware of the fact that California is our best customer. California could be a far better customer of our States. For example, one of the things that has held back the legitimate development of the Pacific Northwest is the fact that we often have to ship our lumber and agricultural products 2,200 miles to find a market. This takes enormous freight rates, and it has held back what we can do. For example, in our State of Oregon a few years ago we were third in the production of turkeys in the Nation. Now we are down to 16 or 17 because it costs so much to send our turkeys to the Chicago market. California, with its vast population, could have a still larger population. I am fully aware of the fact that the bigger a population there is in California, the closer at hand we in the Pacific Northwest are going to have a major market for our products without the prohibitive freight rates which have held us back. So I never have regarded the State of California from this very hostile standpoint that some of my associates in politics have done.

I was interested that Senator Engle brought up section 2(b) of the Bonneville Act, which provides—and he read it—that there shall be an interchange of electrical energy to interconnect the Bonneville project with other Federal projects or other publicly owned projects now or hereafter constructed.

We have had the situation in the Pacific seaboard where we have had the Bonneville system with a surplus and another Federal power system, the Central Valley project, with a deficit in power. I think an important part of the hearing record will be to establish the following fact: At any time was there a specific written request by the Bonneville to the Ceneral Valley project to inquire if the Central Valley project could use and desired to use the surplus power from Bonneville. If prior to any of the present private connections there was worked out from the standpoint of all possible information

whether the Central Valley project in California, a Federal undertaking, could use the surplus should be a study by this subcommittee of the intertie which has been suggested by Bonneville with the Pacific Gas & Electric Co. There should be a thorough study of a Federal intertie between the Bonneville and the Central Valley project, which would be over backbone transmission lines operated and built by the Federal Government.

I think that such a study certainly is the desirable thing at this particular juncture. As Senator Jackson has pointed out, there are many future developments in the Northwest that are imminent which we don't know about. We trust there will be a beneficial agreement with Canada which could add to the production of power by as much as one-third of nearly every downstream project on the main stem of the Columbia all the way from Grand Coulee to Bonneville. We hope that eventually the stalemate on the Snake River will be solved, that the fish passage problem will be studied to such an extent that we can build dams in that area. This would add greatly to our capacity to generate firm power.

Again I want to say that I think we should study both possibilities and until then nothing should be done if that can possibly be brought about. I want to thank you again for your courtesy.

Senator ANDERSON. Thank you, Senator.

Secretary Aandahl, we will be happy to hear your comments on this.

STATEMENT OF FRED G. AANDAHL, ASSISTANT SECRETARY OF THE INTERIOR

Mr. AANDAHL. Mr. Chairman, we from the Department of Interior are very glad of having the opportunity of appearing before your committee and submitting such information as we have relative to the proposed Bonneville-California intertie. The detailed information has been organized by Dr. Pearl, Administrator of the Bonneville Power Administration, and Don Campbell, head of the Power Division of the Bureau of Reclamation. I think we can make best progress by hearing directly from them about that detailed information.

However, before turning to that phase of the presentation, I think there are two comments that should be made about the proposed contract in order that it may appear early in the record. The first comment that I want to make is this. As soon as Dr. Pearl and we in Interior learned that this committee was proposing to hold hearings relative to the intertie, we decided even in advance of the specific requests to delay execution of the contract until after the committee had time to hold its hearing, and we would have an opportunity to know the thinking and the wishes of the committee.

Senator ANDERSON. Would it be fair to ask if there had not been a notice of intention to hold hearings on this and the interest in this by the committee that the contract would have been executed and signed and delivered?

Mr. AANDAHL. The contract, I don't think, would have been executed by this time. I think probably in the reasonably near future it would have been completed.

Senator ANDERSON. It was on its way to consummation.

Mr. AANDAHL. It was on its way. The other comment I want to make is that this is a contract in which Bonneville agrees to sell sec-

ondary power if and when available. It will in no way conflict with the preference law. If at any time a preference customer should need this power or wish to buy it, his wishes and his purchase would take priority over the proposed contract. It is only an "if and when available" contract.

Senator JACKSON. We are talking about preference customers in California.

Mr. AANDAHL. That would be true in California.

Senator JACKSON. That is provided for in the contract?

Mr. AANDAHL. It is an if and when available contract. We have a number of contracts of that kind in the Department of Interior. They have in no way taken priority over preference customers.

Senator ANDERSON. You have just been through some struggles in California where contracts were made by Boulder with various groups and when the preference customer came up, the preference customer could not get the power. Are you not familiar with that? This involved the city of Kingman. Do you recall that one?

Mr. AANDAHL. Those are different kinds of contracts. Those are firm contracts.

Senator ANDERSON. You read me the language in here that says you can cancel it at any time to supply a preferred customer? The preference clasuse is only good until you dispose of it to somebody else, as you and I well know.

Mr. AANDAHL. Yes, but it is not disposed of in this contract.

Senator ANDERSON. You show me the language. I don't know. I have not gone throuh the contract. I want you to show me where it is.

Mr. AANDAHL. May I ask Mr. Morthland from Bonneville Power Administration?

Senator ANDERSON. Yes. I only say that if a public utility is going to build a line all the way.

Mr. MORTHLAND. I am J. Lane Morthland, Assistant Administrator, Bonneville Power Administration.

Senator ANDERSON. I want to say if a utility is going to build a powerline all the way from Bonneville down to California, they certainly are not going to build it on hopes and prospects. They are going to build it on contracts.

Mr. AANDAHL. I think when you see the record that will be presented, you will appreciate the basis on which they are willing to take a chance on enough secondary energy being available so that they would be willing to build the line.

Mr. MORTHLAND. I refer to section 2 of the working draft of the contract which reads as follows:

> Subject to the other provisions contained herein, the Administrator shall make available to Copco for transmission to Pacific, and Pacific shall purchase, such amounts of interruptible power and electric energy as Pacific requests and the Administrator determines, at his sole discretion, that he has available for delivery; *Provided, however,* That such power and energy may be curtailed by the Administrator at any time.

Senator ANDERSON. Do I understand you to contend that says that if a public utility comes in that the preference clause shall take away from Pacific Gas & Electric its current?

Mr. MORTHLAND. Yes, sir. The Administrator recognizes his obligation under the act. I would like also to refer you to the bottom of the page.

Senator ANDERSON. No. He shall make available to Copco for transmission to Pacific, and Pacific shall purchase, such amounts of interruptible power and electric energy as Pacific requests, and the Administrator determines in his sole discretion, that he has available for delivery. That means delivery to everybody. If it is available for delivery to the preference body, it has to be delivered to Pacific, because it is available for delivery.

Mr. MORTHLAND. It is available in his discretion.

Senator ANDERSON. No, not available to somebody else in his discretion. The amount that he thinks he has available for delivery. The total amount.

Mr. MORTHLAND. The import and intent of the clause was not that, Mr. Senator.

Senator ANDERSON. They could have said that if it was the intent.

Mr. MORTHLAND. Permit me to continue.

Senator ANDERSON. Couldn't they have said it, if it was the intent?

Mr. MORTHLAND. Yes, sir. I think we have in another place in the contract.

Senator ANDERSON. When Pacific took you into court on this, the courts would say: "If you intended it that way you would have said it that way."

Mr. MORTHLAND. May I call your attention to the proviso to section 1 at the bottom of page 5, which I should have read first?

Senator ANDERSON. Are you going to cancel on 5 years' notice?

Mr. MORTHLAND. Yes, sir. In accordance with section 5(a).

Senator ANDERSON. That is not what the Secretary was testifying. The Secretary testified that any day he wanted to, he could throw the switch and sell it to the preference clause.

Mr. MORTHLAND. This section is in the preference clause of the Bonneville Project Act which relates to the requirements of contracts made by the Administrator with privately owned utilities, which we feel is assurance that at any time a preference customer, either in California or the Northwest area, the Bonneville area, desires to purchase any of this power and there is not enough available to serve both, what we propose to sell to Pacific Gas & Electric and the applying preference customer for secondary power, we would deliver that power to the extent of the needs of the preference customer. We can determine that usually 5 years in advance and give the company notice that we were going to withdraw under that provision.

Senator ANDERSON. Some of us have had our fingers burned a little on the preference clause. We had a situation where we were dealing with a project on the Mississippi River Basin that got into some power in the State of Ohio, and the question was raised, What about preference clause for the people around there? The answer very definitely was given—I don't say correctly; unfortunately, we have to remember some of these things as we go along—that once the preference customer did not take it and a private utility did, the preference clause was over.

Now if that is different in the Northwest, I would like to see it. I want a ruling that shows me that.

Mr. MORTHLAND. It is different, Mr. Senator. Section 5 of the Bonneville Project Act specifically provides for that.

Senator ANDERSON. So that you can cancel within 5 years if you made a certain determination?

Mr. MORTHLAND. Yes, sir. If we make a determination that a competing preference customer will need that power.

Senator ANDERSON. And the preference customer could apply for it and wait 5 years to get it?

Mr. MORTHLAND. Yes, sir. Usually it can be determined that far in advance of what the needs will be.

Senator ANDERSON. But there is no such thing where they can switch it back and forth?

Mr. AANDAHL. I might say, Mr. Chairman, that I do not have in mind the specific Iowa reference that you referred to.

Senator ANDERSON. I don't, either, but Mr. Lineweaver always has it in mind.

Mr. AANDAHL. I am not aware of such a situation.

Senator JACKSON. To follow this point up, what I wanted to get clear in my mind——

Senator ANDERSON. He may not be aware of it, but he was a witness there that day.

Senator JACKSON. Where is the provision in the contract that requires P.G. & E. to deliver to preference customers in California?

Mr. AANDAHL. Mr. Chairman and Senator, this is not a contract that is intended to sell or deliver power to preference customers. This is a straight sales contract to P.G. & E. It does not intend integration with the Central Valley Bureau of Reclamation project. It is a means of disposing of some excess secondary energy that is going to waste at the moment.

Senator ANDERSON. Mr. Secretary, you heard the reading of this Bonneville Project Act. Do you think that this section 2(b) poses any problems to you in executing this contract?

Mr. AANDAHL. No, I do not. I think that before we go into further detailed study, we should get the basic information that Bonneville and the Bureau of Reclamation has to present. I will be very glad to respond to questions and participate in the discussion. I think that is quite important to our understanding.

Senator ANDERSON. You say you do not think this violates the language?

Mr. AANDAHL. No; I do not.

Senator ANDERSON. Did you read any of the legislative history of the Bonneville Act?

Mr. AANDAHL. Not recently.

Senator ANDERSON. Has anybody in the Department of Interior made a study of the legislative history so they know what was intended?

Mr. AANDAHL. Yes; I am sure from time to time it has been thoroughly reviewed.

Senator ANDERSON. Have they furnished you with any memorandum saying that they think it comports with the act, but also the legislative history behind it?

Mr. AANDAHL. No; this contract has not come into the Department for approval. It was negotiated in the field. We have dis-

cussed it back and forth in a general understanding. There has been a complete understanding that this contract would be submitted to the Department for approval before any action is taken in executing it.

Senator ANDERSON. You said a moment ago in response to a question that it was on its way to approval.

Mr. AANDAHL. Yes; but that may take several months. It may involve a very long and detailed consideration, and particularly so now with the public interest that has been centered on it.

Senator KUCHEL. Mr. Secretary, a number of questions occur to me with respect to the contract itself, but quite aside from those, do you understand the law to be that if the State of California desired to purchase any portion of the energy which was surplus to the needs of the Bonneville power area, the Bonneville Administrator and the Department of interior would have the legal right to sell that surplus power to the State of California?

Mr. AANDAHL. I would be of the opinion that secondary power, such as we are talking about, for which there is no market in the area could properly be sold to the State of California.

Senator KUCHEL. Would the State of California constitute in your opinion a "preference" customer as that word is used in the legislation?

Mr. AANDAHL. Generally so. It would depend a little bit on how they intended to use the power. I think that is something that could be of such a nature that we would have to refer it to our legal staff.

Senator KUCHEL. Assuming, however, that the State intended to use it for pumping requirements in its own publicly owned State water system.

Mr. AANDAHL. I would say no question about it in that case.

Senator KUCHEL. Then there would be no question about it?

Mr. AANDAHL. That is correct.

Senator KUCHEL. Under the present Bonneville legislation, Mr. Secretary, if California desired to purchase that power which was surplus, and Bonneville desired to sell it, then what authority is there in the statute for delivery? That is to say, how would the power be sent to the California border?

Mr. AANDAHL. I would feel that the Bonneville Power Administration would have responsibility to deliver it to the border of the marketing area, and from there on the customer would be expected to make arrangements.

Senator KUCHEL. What is the marketing area of the Bonneville Power Administration?

Mr. MORTHLAND. It is bordered on the south by the California-Oregon border. It encompasses northern Idaho, all of the State of Oregon, the State of Washington, and Montana west of the Continental Divide.

Senator KUCHEL. If I may ask you, sir, this question: Do I understand that the Bonneville Administrator could enter into a contract in your opinion to sell hydroelectric energy to the State of California, and deliver that energy to the State of California at the Oregon-California border?

Mr. MORTHLAND. Under the circumstances which the Senator outlined before, I concur in Mr. Aandahl's statement, that there would be no question.

Senator KUCHEL. Would it have the authority in your opinion to transmit the power into the State of California over California territory? Could he build transmission lines for that purpose?

Mr. MORTHLAND. I am not sure that I follow your question, Senator. Are you speaking of building transmission lines out of our marketing area into the State of California?

Senator KUCHEL. Yes.

Mr. MORTHLAND. No, I would say not.

Senator JACKSON. I think at this point in connection with the earlier proposal several years ago it was contemplated that within the State of California that the Bureau of Reclamation would build the line. That Bonneville's authority would terminate at the border as far as being a Bonneville line, and when it crossed the border, it would become a Bureau of Reclamation line. So there would have to be the utilization of some Federal instrumentality now authorized by law to build transmission lines in California. The only agency that I am aware of is the Bureau of Reclamation.

Senator KUCHEL. I appreciate that contribution of my colleague. Let me ask, has the State of California contacted the Department of Interior or the Bureau of Reclamation relative to the possibility of purchasing power with respect to its own State needs?

Mr. AANDAHL. I am going to ask Bonneville.

Dr. PEARL. It has not.

Mr. AANDAHL. I know we have not in the Washington office.

Senator KUCHEL. I think it has. It may not have come to your attention yet. It runs in my mind that some preliminary requests have been made.

Dr. PEARL. Do you mean did they contact Bonneville or the Bureau?

Senator KUCHEL. No, the Bureau or the Department.

Dr. PEARL. I am speaking for Bonneville.

Senator KUCHEL. What is your name, sir.

Dr. PEARL. William A. Pearl, Bonneville Administrator. They have not contacted the Bonneville Power Administration. They may have contacted the Bureau.

Senator ANDERSON. Would not the Bureau contact you if they contacted the Bureau about Bonneville power? Have we got an iron curtain?

Dr. PEARL. The answer still is we have not been contacted.

Senator KUCHEL. Mr. Secretary, with respect to the policy involved in your signing the contract that has been under negotiation, would the interest of the State of California in purchasing this same type of power contemplated in this contract be given consideration by the Department so that fact itself would enter into what final decision you would make?

Mr. AANDAHL. Yes, it would. I would be of the opinion that this contract would not in any way infringe upon California's privilege and prerogative in buying power if it could use it.

Senator KUCHEL. So there may be no mistake, while the proposed contract, as my able friend, the chairman, points out, would be signed on behalf of the Government by the Bonneville Power Administrator, what is the law with respect to his representing the Department of Interior? Can the Secretary of Interior direct the Bonneville Power

Administrator with respect to whether or not he signs or does not sign this contract?

Mr. AANDAHL. Yes. I am again going to call on someone with legal background.

Mr. MORTHLAND. Under the Reorganization Act of 1950, the Secretary of Interior was vested with all of the powers of the Bonneville Power Administrator established in the Bonneville Project Act. Those powers have been delegated to the Administrator, but the Secretary of the Interior still has the ultimate authority.

Senator ANDERSON. If he has delegated the power to the Administrator, can't the Administrator sign on behalf of the U.S. Government?

Mr. AANDAHL. Yes, he can bind the U.S. Government.

Senator ANDERSON. He planned to sign. The contract does not have a word about the Secretary of Interior.

Mr. AANDAHL. May I refer you to section 15 on page 14 of this contract?

Senator ANDERSON. You refer me afterwards, please. Was there a provision for the Secretary of Interior to sign in the draft work in Interior?

Mr. AANDAHL. There is a provision for the Secretary of Interior to approve this contract prior to its being effective, yes, sir. I refer to section 15 of the working draft of the contract.

Senator ANDERSON. What page is that on?

Mr. AANDAHL. Page 14.

Senator ANDERSON. After it is signed, it is sent in for approval?

Mr. AANDAHL. Yes, sir.

Senator ANDERSON. When it came in for approval, Mr. Secretary, you would read carefully section 4(a) which says that the facilities shall be operated for the benefit of the general public and particularly of domestic and rural consumers, the Administrator shall at all times in disposing of electric energy generated in said project give preference and priority to public bodies and cooperatives.

Mr. AANDAHL. We would be fully mindful of that fact.

Senator ANDERSON. Would you say a contract with the Pacific Gas & Electric was giving this as far as possible to public bodies and cooperatives?

Mr. AANDAHL. Insofar as it would be a sale of surplus secondary energy that was otherwise going to waste and was not being used by preference customers and could not be used by preference customers for some little time, it would in no way be a violation.

Senator ANDERSON. That is right; it could not be used. If there was a preference customers who wanted any part of it his rights come ahead of the P.G. & E.?

Mr. AANDAHL. It would be our purpose to protect his rights.

Senator KUCHEL. I think the chairman has indicated the fact that on the first of the month the Governor of California wrote to his colleagues in Oregon and Washington on this general subject, copies of which correspondence have been placed on the record, in which he goes on to say that he would not favor the proposed agreement, and would hope that a three State study might be helpful as to what additional cooperation with respect to the needs of electric energy may be. In view of the comments of the Governor of my State, Mr. Secretary,

would you be able to indicate what your view would be with respect to approving this contract or not?

Mr. AANDAHL. I would think that there might be room to approve the contract. It might be necessary to put an additional condition in the contract so that the privileges of the State of California and others would be fully protected. You will soon find when Dr. Pearl presents the background information that there is just an abundance of this secondary power. If we can sell a few kilowatt-hours of it and bring some revenue in, we are helping the Federal Treasury and we are helping to preserve the rates of the Bonneville Power Administration.

Senator KUCHEL. With respect to the policy of the Department, however, it would be your statement, sir, that the needs of a public agency such as the State of California should have a priority or a preference in the sale of any power that would be generated in Bonneville?

Mr. AANDAHL. That is correct. We throughout the period of my experience in the Department of the Interior have been very cautious in the contracts that we sign with nonpreference customers to be sure that the power is available for preference customers when they need it.

Senator KUCHEL. And the fact that this hearing is, I think, rather clearly indicating the genuine and very necessary interest of the people of my State, would it not cause you to alter some of the provisions of this proposal before you would approve it on what I take would be a temporary basis.

Mr. AANDAHL. We would be very mindful of the wishes of your people. I am not certain that it would require any alteration. I am of the opinion that this contract has been very carefully drafted. So when associated with the facts, the interests of the preference customers are fully protected. If they are not, then we would alter it.

Senator JACKSON. If the Senator will yield, I just understood from a previous colloquy that there is no provision in here for the protection of preference customers in California for this power.

Mr. AANDAHL. This sale is not in any way intended to go to preference customers. It is a sale to a nonpreference customer. When you associate that with the fact that Bonneville has an abundance of this kind of secondary energy, and we are trying to market some of it rather than let it go the waterways to the ocean.

Senator JACKSON. I know; but did consult the preference customers in California? They may have an equal demand for it.

Mr. AANDAHL. If they have, we have power to deal with them.

Senator JACKSON. How are they going to get it?

Mr. AANDAHL. That is something that will have to be worked out.

Senator JACKSON. I know; but how would they get it? You know they could not get it if you make this contract.

Mr. AANDAHL. No; this contract should not interfere with their ability to get power.

Senator JACKSON. What would they do, build a line and connect with Bonneville—the public bodies?

Mr. AANDAHL. For the purpose of delivering the power under this contract P.G. & E. is proposing to build a line.

Senator JACKSON. That is right. You will have one line after another. If the public bodies want to come in, they would build a line; is that right?

Mr. AANDAHL. There are a number of possibilities.

Senator JACKSON. What is one of the possibilities?

Mr. AANDAHL. The proposal that was under consideration back in 1950, 1951, 1952, and 1953, was a Bonneville line down to the Oregon border and then a Bureau of Reclamation line for the remaining distance.

Senator JACKSON. Don't you see what I am getting at, Mr. Secretary? You have to justify a line economically. You obviously could not have a whole series of lines going to various public preference customers in California. This is not economically feasible. Then why would it not be wise if you were going to negotiate with a private utility in the construction of a line that they act as a common carrier? Why have a series of duplicating lines if we could have one line that would serve public and private? I think that is the weakness in this whole approach here, if you are going to follow this approach.

Mr. AANDAHL. I think when you have the information about the available power you will find there is enough of this secondary power if the market will take it in the California area to justify several lines.

Senator ANDERSON. Several lines?

Mr. AANDAHL. Yes.

Senator JACKSON. That is not economically sound as an engineering matter.

Mr. AANDAHL. I am talking about lines fully loaded.

Senator JACKSON. I am not an engineer, but do you mean to tell me it is far more economical to build a 110 line and a 220 line and then a 445 line? Isn't it far more economical as a matter of engineering to build a 445 line than a series of lines that equal that?

Mr. AANDAHL. I am not going to try to answer that question.

Senator JACKSON. You are in the power division. I think I can answer it. I have listened to the testimony.

Mr. AANDAHL. I am not an engineer. I know in many instances——

Senator JACKSON. What do your engineers tell you?

Mr. AANDAHL. We have two 230-kilovolt lines instead of a 445-kilovolt. That would depend a great deal on the distribution of the load after it gets into the market area. There are many factors there that you just could not offhand give the answer to across the table.

Senator ANDERSON. Mr. Secretary, you said you thought there might be opportunity to build several lines fully loaded?

Mr. AANDAHL. I said there was enough power at the present time.

Senator ANDERSON. For several lines fully loaded?

Mr. AANDAHL. To carry several lines fully loaded.

Senator ANDERSON. Do you think there is a market for it?

Mr. AANDAHL. That is in question.

Senator ANDERSON. To get back to intent, to find out if there is any desire to serve the preference customers, Senator Engle introduced his bill in the House in the 82d Congress. There was a change of administration when the 83d Congress started out. Do you happen to know, or have you heard, or does anybody in the Department know whether there was a start to build an intertie, that poles were put up and various things were done to try to bring this down to the preference customers in California?

Mr. AANDAHL. Bonneville was in the process.

Senator ANDERSON. Bonneville was going to build the Oregon line and the Bureau of Reclamation was going to build down to the Central Valley project in California. What happened? Did Secretary McKay junk the whole thing at once?

Mr. AANDAHL. I think the decision was made by the Congress.

Senator JACKSON. No; in the previous Congress, and I played a part in this. The whole thing was held up, Mr. Chairman, and we wrote into the report, as I recall—I would have to look it up—language withholding any further study on the lines; that is, an interconnection between BPA and the Central Valley system. I think what the chairman has in mind is reference to a sale of a line from Klamath Falls to a place I can't recall—Yamsay—about 70 miles, and it was sold to Copco. I think that would be something we ought to explore and find out a little bit about the economics of it, and how that affects the Government and the public interest.

Senator ANDERSON. The reason I was going to get into it, Mr. Secretary, as I say, we get these notions put into our heads, and they may be wrong. It seems to me that I remember that Secretary McKay proceeded to sell this line to Copco and Copco was so hard pressed by getting it that it paid for it in 3 years. That was a device to bar the sale of this power to Central project of California.

Mr. AANDAHL. It is my recollection that was done as a result of specific language that was attached to the appropriation act. I just asked for a copy of it, but we don't have it.

Senator ANDERSON. In the 83d Congress. I want to get the Congress identified.

Mr. AANDAHL. Yes, I think it was the Congress identified.

Senator JACKSON. It was in 1953 so it had to be.

Mr. AANDAHL. Yes.

Senator ANDERSON. Would you put a full statement of this sale to Copco into the record so we may have it as part of this hearing?

Mr. AANDAHL. Yes, we would be glad to do that.

(The statement referred to follows:)

REDMOND-KLAMATH FALLS TRANSMISSION LINE

The House Committee on Appropriations in its report on the Interior Department Appropriation Bill, 1954 (H. Rept. No. 314, dated Apr. 23, 1953), stated:

"The committee is concerned about the vigorous efforts which have been put forth by the Bonneville Power Administration in recent years to sell its program and its power anywhere and everywhere that it might conceivably build a transmission line. The committee cannot read into the Bonneville Act anything directing the Administration to build transmission lines and related facilities in a continuously expanding area. In line with the general policy which the committee has adopted it will not condone further efforts to expand the geographical boundaries in which the Administration is operating. Also in line with the committee's general policy, many of the cuts that have been made in the program for 1954 were made because of assurances from non-Federal power agencies that they can and will build transmission lines and related facilities in their respective areas of operation. Further, assurances have been obtained from the private utilities in the area that they will work in full cooperation with the Bonneville Power Administration in supplying facilities to take power to all preference customers of the Government and others in the area and that they will make every effort to abide by the terms of the Bonneville Act in so doing.

* * * * * * *

"The committee has information which clearly indicates that expenditures for the Redmond-Klamath Falls line cannot now be justified. The Secretary is requested, therefore, to terminate construction of this line at the earliest possible time and to salvage such materials as can be used elsewhere."

The House in passing the bill on April 28, 1953, upheld the committee action in denying further funds for this facility, and accordingly, required the Administration to stop construction at some point south of Redmond on the line from Redmond to Klamath Falls.

In an effort to work out a solution to the problem of service to the southwest Oregon area, BPA attempted to work out an agreement with the California-Oregon Power Co., to jointly complete construction of the necessary transmission facilities to reinforce power service to southwest Oregon's coastal areas and to provide power for the new defense plant, then under construction by the Hanna Smelting Co., for production of nickel at Nickel Mountain near Riddle, Oreg.

An agreement was reached between BPA and Copco at a meeting held on June 9, 1953, in response to Senator Cordon's request that the two parties jointly consider the proposals made by Copco.

The agreement called for construction by BPA of its line from Redmond to a point called Yamsay Station where an interconnection would be made with Copco's system after their construction of the line from Yamsay to Klamath Falls.

The Yamsay point was determined to be a better point of interconnection for Copco from their proposed line from its Toketee hydro plant.

Copco agreed to purchase all of the materials, rights-of-way, land, designs, specifications, surveys and equipment which BPA had on hand for the completion of the projected Yamsay-Klamath Falls line. The price to the company of these items were the costs incurred by the Government, including normal overheads. Upon settlement of costs Copco paid to the Government $2,895,834.52 for the Government's interest in the facilities.

Copco agreed to construct facilities adequate to deliver the amounts of power required by the Hanna Nickel Smelting plant in fulfillment of BPA's contractual commitment with the Hanna Co.

Thus, the agreement enabled the Government to serve, by interchange with Copco, the power requirements of the defense program's nickel plant and defer construction for several years of a new line from Alvey to Nickel Mountain, which would otherwise have been required at that time. Further, it enabled the Government to utilize an approximate $8 million investment it had already made in the Redmond-Chemult section of the Redmund-Klamath Falls line. The agreement also permitted each utility to retain full responsibility for its own system operations and made possible improved utilization of the region's power resources and transmission facilities.

The Senate Committee on Appropriations in its report on the Interior Appropriation bill, 1954 (S. Rept. No. 445, dated June 18, 1953) stated:

"With respect to item 130, 'southwest Oregon loop service,' the Bonneville Power Administration has an agreement with the California-Oregon Power Co. that the company will build that portion of the Alvey-Nickel Mountain line south from Elkhead to Nickel Mounain to serve the vital defense load for nickel production. The committee has received recent information that there is excellent prospect of working out an alternative method of serving the Nickel Mountain load, and at the same time providing for the complete utilization of the previous investment in the Bonneville 230-kilovolt line completed to Chemult. In allowing $895,000 for this item, the committee does so with the understanding that in the event additional or substitute facilities are constructed by the California-Oregon Power Co., such portion of the funds allowed to Bonneville Power Administration and not used in construction of this facility will not be otherwise obligated."

The Congress, in enacting the appropriation bill, approved this plan of service. BPA and Copco then proceeded to carry out the terms of the agreement.

Senator JACKSON. I think at an appropriate point we should go into this question of wheeling, and how long it would take them to pay for the line and whether the Government keeps paying for the line several times for the wheeling charges. I would like to see the statement and then ask some questions on it.

Senator ANDERSON. We will have to resume the hearing at a later date after we have seen the statement on it, because I think it is very important. I only point out that this is an indication of why there has not been an intertie long ago, and why these public preference

customers have not had a chance to get a crack at this power. They found the door closed.

Mr. AANDAHL. I think in that early history there was a great deal of concern by the people in the Bonneville marketing area States about the sale of firm power to the South. There was local resistance there to the intertie.

Senator ANDERSON. There is no argument about that. But Mr. Tudor knew what he was doing in the Department.

Mr. AANDAHL. He was very well informed.

Senator ANDERSON. Yes, he was. I am sure of that.

Senator KUCHEL. Just on the general basis of policy, Mr. Secretary, if things proceed in my State and the State undertakes the construction of a large segment of our State water plan, called the Feather River project, and if thereafter a need developed for electricity, as it surely would, to pump water over the Tehachapi Mountains or around them into southern California, and if the State desired, as I am sure it would, to purchase energy as inexpensively as it could from the Government, would your Department look with favor on Federal appropriations by which the Central Valley project might obtain electricity surplus to Oregon in California, so that there would be a tie between the two Federal systems?

Mr. AANDAHL. I would want to have more information than I have at the moment before I would attempt to answer that question. There is one observation that I would like to make, and that is there is uncertainty about the timing of the secondary power from the Bonneville area to fit the pumping needs in the Central Valley project. I think there is much more of a question there than is generally appreciated at first sight. I cannot speak specially. I think our engineers can give you some information about that. I know there is a question about it.

Senator KUCHEL. On the basis of policy, if the pumping needs not of the Central Valley project but of the State government were such that they could be satisfied by Bonneville power that was surplus to the needs of the Bonneville area, could you indicate for the Department what its policy would be in tying in through Federal legislation the Central Valley project and the Bonneville Power Administration so that the State might take maximum power?

Mr. AANDAHL. Basically, our responsibility in building transmission lines is for the delivery of federally produced power. The Bureau of Reclamation is concerned about the sale of Central Valley power. You are bringing into the picture a handling of Bonneville power by the Bureau of Reclamation.

Senator KUCHEL. Yes, sir.

Mr. AANDAHL. There are some complications involved to which I would not want to respond immediately and on the spur of the moment.

Senator KUCHEL. No; and I can understand that, I take it that my State government recognizes those complications in suggesting that the States themselves—the three Pacific Coast States—study that complicated problem. My only hope is that you might be able to indicate for the record that as a policy, although Bonneville happens to have somewhat different statutory authority than the Central Valley project operated through the Bureau of Reclamation, generally

as a policy you would favor as close a relationship or tie-in as possible?

Mr. AANDAHL. I would prefer to defer answer to that.

Senator ANDERSON. Thank you, Mr. Secretary.

STATEMENT OF HON. WALTER HORAN, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF WASHINGTON

Mr. HORAN. Mr. Chairman, I am Congressman Walter Horan of the State of Washington. I want to thank you gentlemen for going into this thing. My fear is that by this contract we are in a sense amending the Bonneville Power Act. As I understand it, and as I talk to people in my area—and I know they talked to Senator Jackson—we do have excess power which can be used in California and can give you revenues.

I think this thing is complicated. I think it involves a consideration that we have got to go into before I would like to see a contract of this nature approved. That is about our only position on it.

If I can address myself to Senator Kuchel and Senator Engle at this time, there is one danger here I see and it has to be fully evaluated before we take any action whatsoever. We have this power and it is surplus. But if we were to have this intertie and if you were to build any activity in California around that surplus power which might in time become almost a vested right, then anything you might do in the future would become extremely complicated. You are aware of that, I think, Senator Jackson. In the future if some of our preferred customers in the State of Washington wanted to reclaim this power we might have just a little bit of a war between the States involving this power.

Senator KUCHEL. Let me allay your apprehension to the extent that I can, and I think my colleague will agree with me.

Mr. HORAN. It is a danger that I felt that should be raised.

Senator KUCHEL. Yes, sir.

Senator JACKSON. I think at this point the main problem that one would face is that if you build a line you have to be able to amortize, whether it is a private line or a public line. This is fundamental. If you are going to amortize it, I assume you would have to have some assurance that power would flow over the line.

Mr. HORAN. That is right.

Senator JACKSON. The people of the Northwest, I think, are pretty unanimous on one thing. They do not want to make a firm power contract any more than California would want to make a firm power contract to serve the Northwest to provide firm power. I do feel it is a matter of simple economics that one should try to sell everything you have and not waste it. At the same time, you have to take care of your own people first.

Mr. HORAN. Or amend the act.

Senator JACKSON. I think we all understand one another. We develop our own resources for our own area and then we try to make economical use of our resources. I think the real problem here is very simple to get right down to the nub of it. It is this: If you are going to build a large line you are going to have to invest quite a bit of money. If you are going to get your money out of it you are going

to have to use the line. But you can't very well go ahead unless you have assurance that the line will be used.

This in turn implies some contractual obligation to deliver over a period of time, or if there is not that contractual obligation—a firm obligation—then it follows logically you would have to be willing to take a chance and assume that by the very nature of the system that surplus would continue. I suggested earlier that there are some events underway or some things that might happen in the Northwest in connection with the firming up of this so-called surplus power by reason of the development of storage in Canada.

Negotiations are underway between our Government and Canada and we are making some progress. So we do have some problems here. I think you may not have been here at the time, Congressman Horan, but I suggested that there be a thorough study of both approaches.

Mr. HORAN. I think that is right. We should have a thorough study and that is the reason I want to compliment this committee.

Senator JACKSON. Before taking any action.

Mr. HORAN. That is right. There are a lot of things involved here and I think good judgment on the part of all of us can possibly work it out. This was unknown to me when this contract was evolved. Since it does involve the nature of Federal laws that the Congress has passed, we are going to have to take a long look at it or be sorry in the future that we did not give it more consideration.

Senator JACKSON. In other words, there are a lot of things that have to be gone into. For example, we are talking about as much as a million kilowatts surplus. This contract won't take care of a million kilowatts because the lines are not adequate. From an engineering standpoint they just cannot carry the load. If your objective is to do this economically, then logically as an engineering matter I would think—and I would like to hear from the experts—that it might be more feasible to go into the engineering and build a line that will carry a greater load because it would be far more economical. This again presents a problem of getting all the facts on the table and know what the whole story is, where we are going and what is involved.

Mr. HORAN. Mr. Chairman, that is about all I had to say. I just wanted to make this committee aware of my interest in this matter and that it is serious. We do have surplus power that can be sold and the Treasury benefited by that way.

I have a little complaint about the method that is used in this instance. I suggest to the committee that this has been a hearing, from what I have listened to. I think we ought to go into this further. That is my own conclusion. I think by mutual consent and by the use of good will maybe we can work out something mutually beneficial to the Pacific slope. I think that is the feeling that my colleague from Washington has.

With your permission I would like to submit a little longer statement for the permanent record.

Senator ANDERSON. Thank you, Congressman.

Senator KUCHEL. Mr. Chairman, if I may interrupt for a moment, I ask that a letter dated January 16, 1959, addressed to the regional director of the Bureau of Reclamation in Sacramento and signed by Mr. Harvey O. Banks, the director of the Department of Water Resources of the State of California be inserted in the record at this

point. In a word, the State of California applies in this letter for Central Valley project power in whatever amounts can be made available for the State of California for Delta diversion project pumping.

In that connection I would like to ask most respectfully if my friend Secretary Aandahl could supply for the record subsequently the general position which the Department might take with respect to tying in the Central Valley project in California with the Bonneville Power Authority in the Northwest.

(The correspondence referred to by Senator Kuchel is as follows:)

U.S. DEPARTMENT OF THE INTERIOR,
BUREAU OF RECLAMATION, REGIONAL OFFICE, REGION 2,
Sacramento, Calif., January 29, 1959.

MR. HARVEY O. BANKS,
Director, State of California,
Department of Water Resources,
Sacramento, Calif.

DEAR MR. BANKS: This will acknowledge your letter of January 16 in which you apply for power for your proposed Delta diversion projects pumping. No surplus power is available from our existing facilities. However, we will be glad to discuss your power needs at your convenience.

We assume that you are also considering use of power generated from future State power facilities for Delta pumping.

Sincerely yours,

B. P. BELLPORT, *Regional Director.*

STATE OF CALIFORNIA,
DEPARTMENT OF WATER RESOURCES,
Sacramento, January 16, 1959.

MR. B. P. BELLPORT,
Regional Director, Region II,
U.S. Bureau of Reclamation,
Sacramento, Calif.

DEAR MR. BELLPORT: In the studies being made for supply of the large amounts of pumping power that will be required for the State's Delta diversion projects, the Federal Central Valley project has been considered as a possible source. Investigation as to the present or future availability of such power appears to be appropriate at this time in view of the possibility of congressional authorization of the proposed Auburn development which would make additional power available in the future.

Application is hereby made for Federal Central Valley project power in whatever amounts can be made available to the State of California for Delta diversion projects pumping. We suggest that negotiations be initiated as soon as possible to determine the cost and availability of energy for that purpose.

Very truly yours,

HARVEY O. BANKS, *Director.*

Senator ANDERSON. We would appreciate, Governor Aandahl, if you would comply with that request of Senator Kuchel.

(Mr. Aandahl subsequently submitted the following:)

Present information indicates that at this time Bonneville surplus secondary energy would be of very limited, if any, value to the Central Valley project. In this circumstance and until an advantage is apparent, it would be premature for the Department to express an opinion on its general position with respect to tying in the Central Valley project in California with the Bonneville Power Administration in the Northwest.

Senator ANDERSON. Dr. Pearl is the next witness.

STATEMENT OF WILLIAM A. PEARL, ADMINISTRATOR, BONNEVILLE POWER ADMINISTRATION

Mr. PEARL. Thank you, Senator Anderson, and members of the committee. I appreciate very much the opportunity to meet with this group to give you details of what we propose. I think many of the questions that have been asked this morning will be answered as of the time that I cover the detail of the type of power and the availability.

Before continuing, I would like to submit the following material in your record of these hearings. First, a statement of the negotiations we are undertaking, the availability of surplus energy, a duration curve, loads and resources in the western group area, estimated distribution of Federal power in a critical year, estimated distribution of Federal power in a median water year, BPA construction program for fiscal year 1960, Pacific Northwest transmission agreements.

Senator ANDERSON. The BPA construction program will be submitted for the committee file because it would be very hard to reproduce. Is the Pacific transmission system similar?

Mr. PEARL. Yes, sir.

Senator ANDERSON. We will receive it for the record and determine later whether we can put it in the record.

Mr. PEARL. Policy with respect to the sale of power is the last item.

(The data referred to follows:)

STATEMENT OF PROGRESS OF NEGOTIATIONS FOR PROPOSED SALE OF SURPLUS SECONDARY ENERGY FROM FEDERAL COLUMBIA RIVER POWER SYSTEM [1]

During the Bonneville Power Administration's Advisory Council and customers' meetings held in November 1958 at Seattle, Spokane, and Portland, our financial situation was discussed. The Administration pointed out that the Columbia River power system operated at a deficit for the first time in fiscal year 1958 and would have a deficit again in fiscal year 1959. Possible increase of sales was mentioned as a means to help reduce the deficiency.

For a number of years Bonneville will have large amounts of secondary energy, particularly during the months of May, June, and July, which are surplus to the requirements of our marketing area and which unless sold outside the area would be spilled and wasted to the ocean. It was pointed out to the customers and members of the Regional Advisory Council that for a number of years Bonneville had sold some of this same type of energy to British Columbia utilities through the tie at Blaine, Wash., to the Idaho Power Co. through the LaGrande, Oreg., tie and to the Montana Power Co. through interconnections at Anaconda and Kerr Dam, Mont. Sale of some of this surplus energy to California utilities was mentioned as another possible market.

Immediately after the customers' meeting in Portland, Mr. Boyle, vice president and general manager of the California Oregon Power Co., called on the Administrator to explore possible sales to California. He offered to use his company's existing facilities and to build any necessary additional facilities to wheel power to the Pacific Gas & Electric Co., which, he reported, had expressed interest in securing some of our surplus. This was further reviewed with him in December 1958.

In December 1958 the Administration telephoned Central Valley Bureau of Reclamation officials in Sacramento to ascertain whether a sale of Bonneville surplus secondary energy to northern California utilities would in any way affect the Bureau's activities in northern California. At that time the Bureau officials advised that on the face of the proposal, it did not appear that it would

[1] Several maps (in color) submitted with this document were unsuitable for reproduction. They are on file with the committee for reference purposes.

interfere with Bureau relations with Pacific Gas & Electric Co. or interfere with Bureau planning. The Bureau advised also that if technical studies indicated otherwise, Bonneville would be so advised.

On January 13, 1959, two members of the Bonneville staff met with officials of the Pacific Gas & Electric Co. in San Francisco to examine the possibility of a sale of surplus secondary energy to this company. Prior to this meeting the Administration made some analyses which indicate that it was probably economically feasible for Pacific Gas & Electric to buy this type of energy at the border of the Bonneville marketing area for steam displacement. The Pacific Gas & Electric system then appeared to be the only immediate large market for this type of surplus energy in northern California.

At this initial meeting it was made clear that the energy which Bonneville might have for sale to California utilities would have the lowest priority over all other demands, except sales of similar energy to Canadian utilities; also that Bonneville was interested in a contract term of not more than 10 years, with the usual 5-year withdrawal clause in favor of preference customers required by the Bonneville Project Act in sales to privately owned utilities. It was explained that the Administration was not interested in committing this type of energy beyond 10 years as it knew that with further development of storage in the Columbia Basin and the advent of thermal generation every one of these kilowatt hours would be useful in the Pacific Northwest.

The Bonneville Power Administration proposed to deliver amounts of surplus secondary energy, which could not be utilized in the Pacific Northwest but which could be used by Pacific Gas & Electric, to the border between Oregon and California, subject to satisfactory wheeling arrangements with the California Oregon Power Co. Bonneville told the Pacific Gas & Electric that any one of our existing rate schedules that was applicable could be utilized. The company indicated a principal problem was one of adjusting its fuel contracts and stated that they would proceed with a feasibility analysis and investigate what could be done with respect to their fuel situation and the absorption of Bonneville's surplus energy into their system.

On February 4, three members of the Pacific Gas & Electric Co. engineering staff met with Bonneville resource engineers to secure additional information relating to availability of energy to further test feasibility of the interconnection. The Administration prepared a sample contract so that the company officials could analyze the interconnection further in terms of rate application, delivery requirements and limitations and other standard Bonneville contract provisions. At this time it appeared that approximately 1 billion kilowatt hours annually of our surplus energy could be worked into the company's system economically.

On March 11, members of the Pacific Gas & Electric staff met with the Bonneville Power Administration in Portland. The general purpose of the meeting was to try to reach agreement on general principles for submission at the hearings of the Senate Interior and Insular Affairs Committee in April and to ascertain as precisely as possible the magnitude of the proposed sale in light of the company's analysis. At this meeting the company stated that it appeared to be feasible for them to purchase the type of energy which was being offered at Bonneville's "C" rate on an interruptible basis ($1.46 per kilowatt per month) and build 70 miles of 230 kv transmission from their Pit No. 3 plant to the Oregon border to connect with the California Oregon Power Co. system which would be expanded with 20 miles of new 230 kv transmission from Klamath Falls. Bonneville's energy would be delivered to the California Oregon Power Co. at its present connection at Yamsey, Oreg. The California Oregon Power Co. would in turn deliver it to Pacific Gas & Electric at the new point of interconnection between their respective systems. Sales terms were discussed in further detail. It was agreed that it was desirable to incorporate final terms and conditions in contract form for examination by the Senate committee at the hearings scheduled for April 8 and 9.

At the conclusion of this meeting there seemed to be general agreement between the parties to terms in the event the proposed sale is consummated. The sample contract mentioned above was to be redrafted to incorporate changes requested by the parties and to be submitted for further study.

At the March 11 meeting, representatives of the California Oregon Power Co. were also present to discuss terms of a transmission contract covering the delivery of any power sold to Pacific Gas & Electric by the Bonneville Power Administration to the Oregon-California border. General agreement on the terms of such a contract was reached except for the wheeling charge to be paid if the service is rendered. The level of this charge was reserved for further study in light of costs involved. A sample contract embodying the general terms of transmission in the event the proposed sale is consummated was prepared and submitted for further study.

Availability of surplus secondary energy, U.S. Columbia River power system—Surplus after serving the requirements of an estimated 600 average megawatts for interruptible industrial loads and for fuel displacement in the Pacific Northwest

[Based on a 20-year study, July 1, 1928 through June 30, 1948]

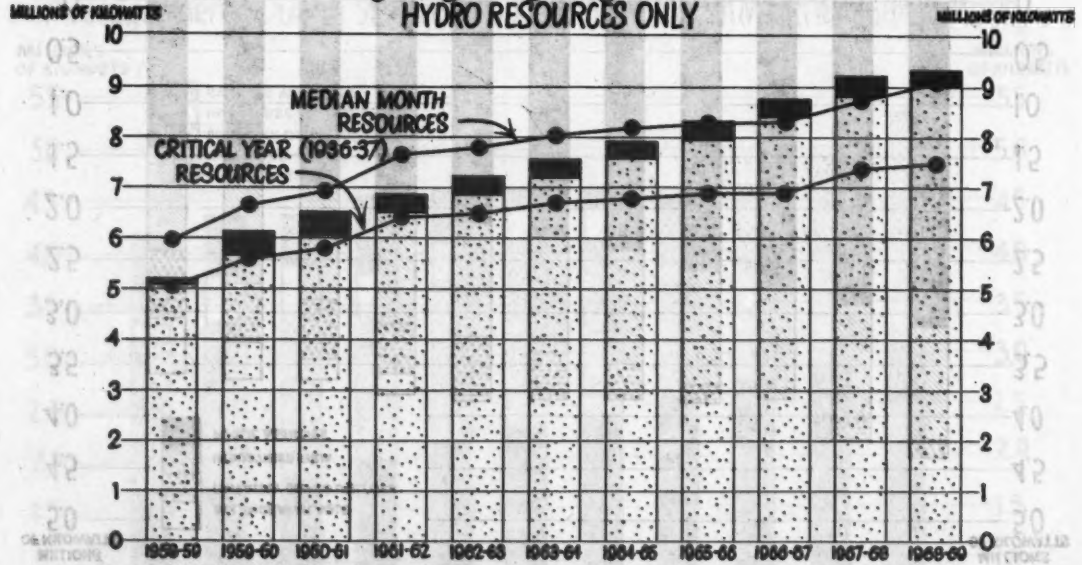
Month	Percent of time indicated amount of available surplus energy in average megawatts is equaled or exceeded							
	1962-63 level of development				1968-69 level of development			
	200	400	600	1,000	200	400	600	1,000
July	100	100	100	100	100	100	100	100
August	100	100	100	88	100	100	100	67
Sept. 1-15	96	85	68	29	41	32	20	9
Sept. 16-30	19	14	10	2	32	27	21	15
October	19	17	16	13	27	21	19	16
November	21	18	16	12	49	43	34	20
December	32	30	28	23	56	50	45	30
January	38	31	25	18	57	46	36	21
February	57	53	41	19	54	48	32	22
March	57	50	47	40	72	69	60	44
April	82	78	75	69	84	83	80	62
May	100	100	100	100	100	100	100	100
June	100	100	100	100	100	100	100	100

BONNEVILLE POWER ADMINISTRATION

Loads & Resources* West Group Area

Average Energy during Storage Drawdown Period

HYDRO RESOURCES ONLY

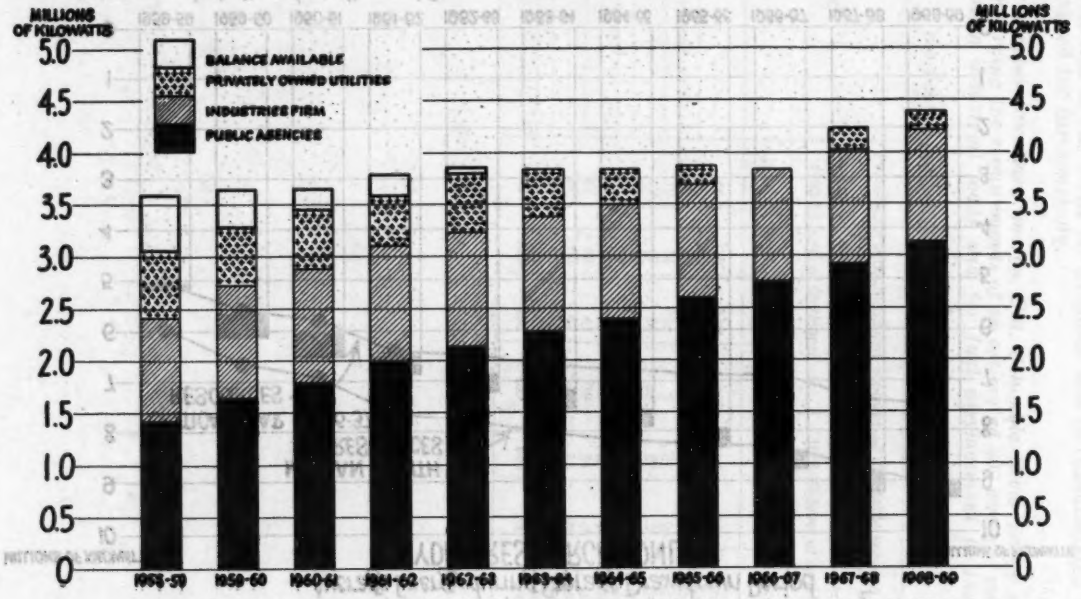


* Resources include projects licensed & under construction in West Group Area, Federal Generator Installation Schedule "BB" dated Feb. 4, 1959

BONNEVILLE POWER ADMINISTRATION

Estimated Distribution of Federal Power

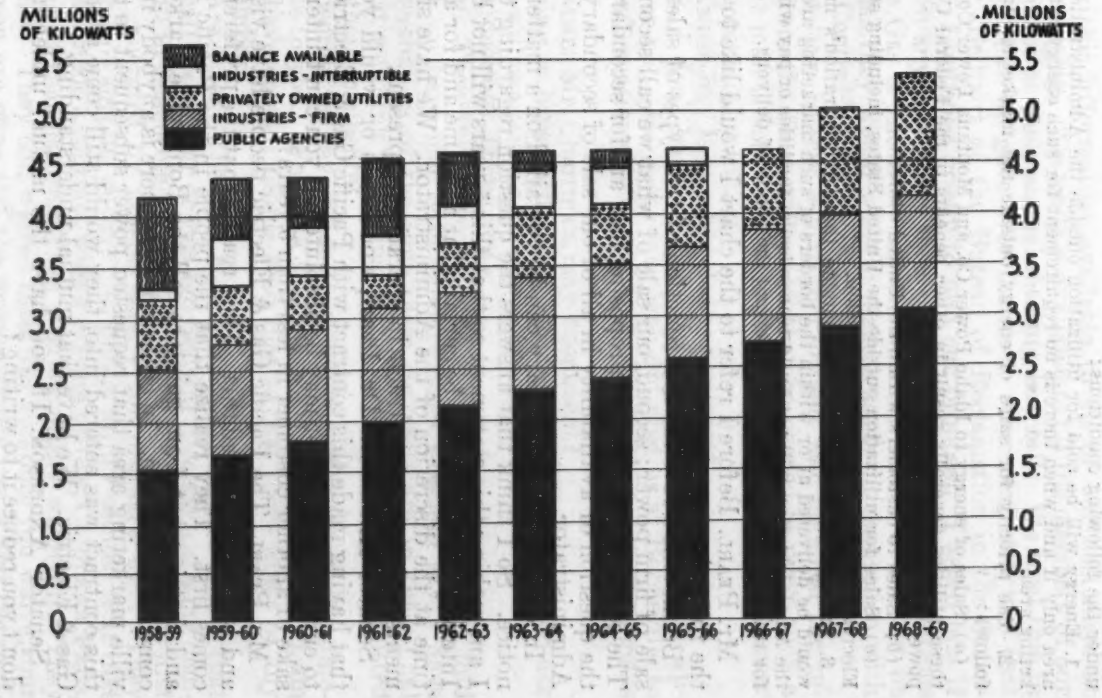
Average Energy During the Storage Drawdown Period - Critical Year (Sept. 16-Apr. 15)



BONNEVILLE POWER ADMINISTRATION

Estimated Distribution of Federal Power

Average Energy During Storage Drawdown Period–Median Month Year (Sept 16-Mar. 31)



POLICY WITH RESPECT TO THE SALE OF POWER

The Bonneville Power Administration will sell power on a firm contractual basis for consumption only within the Administration's designated marketing area. However, the Administration will sell power on a nonfirm basis for consumption either within or outside of the Administration's marketing area, provided that sales for consumption outside the marketing area will be made only under the following conditions:

1. Energy will be sold for utilization outside the Administration's marketing area only if and when there is no requirement for such energy within such marketing area.

2. The priority for sales of energy outside the marketing area will be as follows:

(*a*) Sales of energy to Idaho Power Co. and Montana Power Co. since sales to these utilities generally result in other benefits to the Federal Columbia River power system.

(*b*) Sales to customers within the United States.

(*c*) Sales for utilization outside the United States, including sales to the BC Electric Co. and BC Power Commission.

3. Energy sold for utilization outside the Administration's marketing area would be delivered at or within the borders of such marketing area. Therefore, the Administration will not build transmission facilities or pay wheeling charges for transmission of such energy beyond the points of delivery.

Mr. PEARL. Before I refer to the chart I would like to briefly make the following statements.

Bonneville's revenue is a function of two types of sales: First, our sale of firm power; second, our sale of what we call secondary power. The contracts that we are proposing now are for secondary power and the question of availability in all of our sale of secondary is up to the Administrator.

In other words, secondary can be curtailed on a matter of hours of notice. So I think that answers the question regarding the pullback. I am making this statement so that this 5 years will not be confusing. Interruptible power can be curtailed at any time and for any length of time at the discretion of the Administrator. We have similar agreements and types of contracts in operation at present.

Senator ANDERSON. Dr. Pearl, would you or would you not agree that having made this contract with Pacific Gas & Electric, your right to curtail or interrupt may be absolute but you can't interrupt for the sake of another customer in less than 5 years?

Mr. PEARL. The Pacific Gas & Electric people have visited with us and we have discussed this. They realize that the preference customer comes first. They realize that the people in the Pacific Northwest—and that is what I am going to call the Bonneville marketing area—come ahead of them. In other words, if there is anybody in the Bonneville marketing area that requested power subsequent to the time that this contract was entered into, they would still come ahead of Pacific Gas & Electric. We have that mutual understanding.

Senator ANDERSON. If you have the mutual understanding, why don't you reduce it to writing?

Mr. PEARL. We feel it is in the contracts. If it is not in the contracts, I will be the first one to recommend that they be revised so that it is perfectly clear.

Senator ANDERSON. I think you would be very much interested in this California situation I referred to a while ago where some people wanted to get some power from Hoover Dam and if it had not been for the intercession of Congress they would still be wanting.

Mr. PEARL. Since you mentioned this, I will briefly review the procedure that we have gone through. When we first decided that we ought to find a market for this dump power—and I really maybe should call it secondary—we thought the first thing we should do is to publicize it to see what the reaction of people would be to such a proposal.

We made this information available to all of our customers at our annual meeting. We made it available to all the members of our advisory council at their annual meeting last fall. We used this in various talks that we gave over the area. Our next step was that I called Mr. Bellport of the Bureau of Reclamation in the Sacramento area. I outlined briefly to him our proposal. I asked him if that would in any way affect their operations, plans, or negotiations with Pacific Gas & Electric. He did not feel that it would, but he indicated that they would want to make a study in connection with the tie with Central Valley.

Since that time he sent a man to Portland who obtained the information from the Bonneville staff that he needed to make such a study. That man is here today and I am not going to try to answer the questions pertaining to that.

Senator ANDERSON. Is he scheduled as a witness?

Mr. PEARL. I don't know whether Mr. Fleming is scheduled to appear today or not. He is the man who did visit us at Bonneville to obtain the information that would make it possible for them to make such a study.

Mr. AANDAHL. Mr. Chairman, may I comment?

Mr. Fleming is here with Don Campbell and if you wish to ask questions he will be available for that purpose.

Senator ANDERSON. Thank you.

Mr. PEARL. Then in connection with the contracts, we have told groups that we have met with—and perhaps I should say I have told groups—that as of the time these contracts are in their final form or what we think is the final form, that they will be submitted to them for their comments.

In other words, we have made these statements just like the statement I made to you. We think that our contract covers that. I am anxious to have enough people read that so that there won't be any misunderstanding.

Senator ANDERSON. The only reason I raise these questions is that you may recall that a year or two ago General Electric had a big demonstration up in Schenectady, N.Y., in which they turned on the first power ever generated by atomic energy for ordinary uses. They had a tiny bit of surplus power. No public utility wanted it at that time and they made a contract with a private utility, Chippewa Falls, or something of that nature. Then a public utility wanted it. They had no chance. They had waived their day and once you waive your preference you are gone and the private utility has it and the preference clause is no longer applicable. I am not a lawyer, so I speak freely on that legal point.

Mr. PEARL. I think if I go over the physical setup it will clear up many of the questions that have been asked this morning. So I would like to refer to some charts that we have prepared. I am rather glad since hearing the questions this morning that we prepared these

charts, because I think the charts do in a large way answer many of these questions.

To give you an idea of the background of our negotiations, the Bonneville grid, as we have indicated this morning, covers Montana west of the Continental Divide, northern Idaho, Oregon, and Washington. The P.G. & E. grid we have indicated here. I have not shown all of the Bonneville grid but just the part in Oregon to show you the proximity of these two large grids.

The part that is green on this chart is Copco lines, the red is Bonneville, and the black is P.G. & E. You can see that there are now ties between California and the Bonneville grid. Likewise, there are ties between Bonneville and Idaho Power. We are selling Idaho Power just this same kind of energy that we are talking about today. We have ties a little farther north with Montana Power Company. Similarly, we sell this type of power to them.

Up in the northern part of Washington we have ties with BC Electric. We sell power to them. Again I am referring to this secondary type of power. Last year we sold power to the BC Power Commission and it was wheeled over the BC Electric lines to get it from the Bonneville system into their system. This is not materially different, but when I show you the quality of it and the volume of it, I think it will answer many of the questions that have been asked this morning. So with this little discussion I want to add just one item: We can now sell power to P.G. & E. by the route of Copco's lines, but those lines are not very large. If you were to look on the map you will find the highest voltage is 120,000 and that won't carry very much power. So as a result of this, which would carry half a million dollars worth of power into the California area, it would not mean much to us by way of revenue nor would it mean much to California by the way of energy. So it was the proposal of Copco and P.G. & E. that they build a line from Pitt 3 to Klamath Falls. There we would have a 230-volt line feeding them over which we could carry a material amount of power, and I am referring to about 200,000 kilowatts. This would be constructed by them. It does not require any Federal funds. It is a minimum connection to get some of this dump power, that is of very low quality, on the market.

Senator ANDERSON. Would you just indicate on the map where the line is that Copco bought originally at this relatively attractive price?

Dr. PEARL. Copco presently runs from Yamsay to Klamath Falls. They would build a line from Klamath Falls to the border.

Senator JACKSON. Senator Anderson wanted to know the line that was purchased from Bonneville in 1953.

Mr. PEARL. They purchased material.

Senator ANDERSON. They had poles and right-of-way.

Mr. PEARL. The material they purchased from Bonneville was used to construct that line and a substation in the line from Yamsay to Klamath Falls.

Senator JACKSON. Just to clarify the point, actually in 1953 the previous Congress had appropriated the funds and the contract had been let, at least in part, and this was stopped in 1953 and sold as is to Copco by Bonneville.

Mr. PEARL. That is right. That is the first year I was at Bonneville. We were ordered by Congress to stop our line at Yamsay and sell this remaining material to Copco.

Senator ANDERSON. As I understand it, there was a right-of-way purchased and poles had been set. I don't regard that as material. Do you regard that as material?

Mr. PEARL. When I say material I am talking about the poles, the wire and all the material necessary to build the line.

Senator ANDERSON. The line was in process of construction.

Mr. PEARL. That is correct.

Senator ANDERSON. Where was the line in process of construction?

Mr. PEARL. The line was in process north of Yamsay. But the material and the right-of-way had been obtained down to Klamath Falls.

Senator ANDERSON. Starting where?

Mr. PEARL. Redmond, Oreg.

Senator JACKSON. It was part of an overall line and an arrangement was made to stop the line from Yamsay to Klamath Falls. The line north of there was completed as a part of that same contract.

Mr. PEARL. It was all one contract.

Senator ANDERSON. Was it your testimony now that the line lying westward that you pointed to, that was rather small, is not the line they intend to use but the line they would now use is the one that the Government started to build in 1951 or 1952.

Mr. PEARL. The line that would be used to take the bulk of the power to P.G. & E. would be the Bonneville line that runs north and south and stops at Yamsay, Copco line that starts at Yamsay down to Klamath Falls, a new line from Klamath Falls to the border, and a new line built by P.G. & E. from the border to Pitt 3.

Senator JACKSON. To follow that same point Bonneville would have to pay a wheeling charge over the line from Yamsay on down, would they not?

Mr. PEARL. In our attempt to get all the material settled and all these points settled before we appeared before this committee we tried to have our two contracts completed in draft form. We do not have our contract completed with Copco that involves what you are talking about, and that is the question of wheeling. There is on thing: If the power would flow over Copco's lines.

Senator JACKSON. Part of it was the former Bonneville line which had been sold.

Mr. PEARL. Which has been sold.

Senator ANDERSON. Do you regard the sale to Copco was a good sale? Did they pay off in about 3 years their costs and now you have to pay them?

Mr. PEARL. I never heard of such a statement before.

Senator ANDERSON. Do you have any reason to doubt it? I realize that all estimates made by a Senator are subject to doubt. But other than that, do you have any engineering or financial data that contradicts in any way that statement?

Mr. PEARL. Every time we try to figure out how long it takes to amortize a line we have never found one yet you could amortize in 3 years or 5 years or any such small time as that. If I were to answer your question based on the amount of power that is flowing over that line I say it has not been amortized. That is off the hat.

Senator JACKSON. Let us extend that point. If this agreement goes through there will be quite a bit of power going over that line. Won't that make some difference?

Mr. PEARL. You are correct. There will be a considerable amount of power going over the line. The type of contract that we will enter into with Copco is the thing that we just have not finished.

Senator JACKSON. Dr. Pearl, maybe we can go into this whole Yamsay-Klamath line later but I wanted to ask on one point now. How much did Bonneville get for that uncompleted line?

Mr. PEARL. We can submit that for the record. It is roughly $2 million.

Senator JACKSON. I want to ask a lot of questions about it and if I get it for the record it will be after the hearing is over and I can't cross-examine witnesses.

Mr. PEARL. I can tell you that the money we received was just a little over $2 million for the material that we sold to Copco.

Senator JACKSON. In your judgment was that a fair price?

Mr. PEARL. We got every dollar the Government had in it.

Senator JACKSON. Every dollar the Government had in it, but it was already part of another line. So it had certain other value. It was part of an extension of the Bonneville line that was suddenly cut off. The one that comes down from the north.

Mr. PEARL. Now you are referring to the part we had completed.

Senator JACKSON. Yes. So it was a great advantage. The true market value is not in terms of what the Government put in and then got back. Wouldn't you take into consideration what Copco can make out of that operation?

Mr. PEARL. The line, of course, has helped us in serving one of our customers that we serve by exchange with Copco. We sell power to the Hanna Nickel Co. Copco delivers this to them at Riddell, Oreg., and we deliver the power to Copco.

Senator JACKSON. Is it a reciprocity arrangement or a wheeling charge?

Mr. PEARL. It is reciprocity in that we give them the power at one point of delivery and they deliver it over their line to our customer.

Senator JACKSON. Is there a charge for that?

Mr. PEARL. No.

Senator JACKSON. There is no charge?

Mr. PEARL. No.

Senator JACKSON. How is Copco paid? By doing something for Copco?

Mr. PEARL. Maybe Bernie Goldhammer of Bonneville Power can answer that question.

STATEMENT OF BERNARD GOLDHAMMER, COMMERCIAL OPERATIONS OFFICER, BONNEVILLE POWER ADMINISTRATION

Mr. GOLDHAMMER. Our contract with Copco provides that there will be an equal exchange of energy or killowatt-hours but we provide them, if available, twice the capacity, approximately, that they provide us. In other words, our payment to Copco is payment in capacity rather than a payment in money or payment in energy.

Senator JACKSON. That is hardly a reciprocal arrangement. You are delivering twice as much for them.

Mr. GOLDHAMMER. No. Let us put it this way: They deliver to Nickel for us about 65,000 kilowatts at close to 100-percent load factor.

We in turn would deliver to them roughly 130,000 kilowatts at about 50-percent load factor. In other words, we are exchanging the same amount of energy (kilowatt-hours), but we are delivering to them for their load at their average load factor, and they are delivering to our load at our average load factor.

Senator JACKSON. I realize that figures can confuse the situation, but so that we understand this in terms of dollars and cents, is this an equal arrangement in terms of dollars and cents as far as the Federal Government is concerned?

Mr. GOLDHAMMER. We made an analysis of it which I don't have with me, but it proved to be more economical for the government to wheel on this exchange basis with Copco than the ordinary exchange basis where we make a payment on facilities that are used.

Senator JACKSON. But that all depends on what you predicate your wheeling charge on.

Mr. GOLDHAMMER. Our wheeling payments that we generally make to the privately owned utilities in the Northwest is 1 percent per month on the investment that is used in wheeling our power.

Senator JACKSON. One percent a month.

Mr. GOLDHAMMER. That is 12 percent a year annual charges.

Senator JACKSON. This line is going to be quite advantageous to Copco. I am talking now of the Yamsay-Klamouth line. It is going to mean a lot of revenue for Copco.

Mr. GOLDHAMMER. Whether or not it means a lot of revenue depends on the type of wheeling arrangement that is negotiated with them.

Senator JACKSON. And with Bonneville?

Mr. GOLDHAMMER. That is right.

Senator JACKSON. What is your proposal?

Mr. GOLDHAMMER. We haven't made a proposal. We have had some discussion with Copco. We haven't had anything yet that was acceptable to us. I don't think we have.

Senator JACKSON. Let me ask you this: How can you propose an agreement here in connection with the tie-in between Copco and P.G. & E. unless you have at the same time reached an agreement on the wheeling charge?

Mr. GOLDHAMMER. We cannot conclude our agreement with P.G. & E. until we do reach such an agreement.

Senator JACKSON. Why has that not been going in parallel?

Mr. GOLDHAMMER. It has been going in parallel.

Senator JACKSON. If it is going in parallel, then let us have the parallel document.

Mr. GOLDHAMMER. You have it.

Senator JACKSON. It is in the record?

Mr. GOLDHAMMER. It is in the record.

Senator JACKSON. The proposed wheeling charge?

Mr. GOLDHAMMER. No.

Senator ANDERSON. Are you or are you not in agreement between Copco, P.G. & E. and yourself?

Mr. GOLDHAMMER. We are not in agreement as to the wheeling charge.

Senator ANDERSON. You are in agreement with this?

Mr. GOLDHAMMER. That is right.

Senator ANDERSON. Therefore, they are not moving in parallel. It is as simple as that, is it? It does not take a legal mind to figure that one out. You have one agreement and you haven't the other one.

Senator JACKSON. I understood you to have the agreement because I asked if they are proceeding in parallel and you said "Yes." If they are proceeding in parallel obviously you have a document that is similar to the document you put in the record in connection with the intertie between Copco and P.G. & E.

Mr. GOLDHAMMER. I misunderstood you. We have agreed as to the general terms of the contract. The contract that you have, the wheeling charge has been omitted. That is the one point that has not been agreed upon.

Senator JACKSON. That is pretty important.

Mr. GOLDHAMMER. That is right.

Senator ANDERSON. Why do you not postpone all activities until you can agree among yourselves. Why get the Congress and Secretary of the Interior and everybody else in it if you can't agree out there?

Senator JACKSON. What is Copco asking as a wheeling charge?

Mr. GOLDHAMMER. The most recent one was what? Seven-tenths of a mill per kilowatt-hour and they would absorb the losses.

Senator JACKSON. Spell that out in terms of dollars and cents.

Mr. GOLDHAMMER. If we deliver to Pacific Gas & Electric approximately a billion kilowatt-hours during a year, that would mean we would pay in wheeling $700,000.

Senator JACKSON. $700,000 in a year?

Mr. GOLDHAMMER. That is right.

Senator JACKSON. Then this 3-year figure is not so wild.

Senator ANDERSON. They paid $2 million for it. It works out pretty well.

Senator JACKSON. How far off is that? Three times seven is $2,100,000.

Mr. GOLDHAMMER. There would be more involved than just this line. The Yamsay-Klamath Falls line in which they have an investment of $2,400,000, they figure their investment in the new facility from Klamath Falls to the border would be an additional million dollars. Then there is an absorption of losses. However, we have not agreed to this proposal.

Senator JACKSON. Do you not think that figure is pretty exorbitant as a wheeling charge that they propose if you throw in the million dollars?

Mr. PEARL. That is the reason we are not in agreement.

Senator ANDERSON. Is there any reason to postpone this whole action, Mr. Secretary, until you get the agreement?

Senator JACKSON. I think as a matter of bargaining I would not agree on this other.

Mr. AANDAHL. I think if your committee feels that the sale of this secondary power to Pacific Gas & Electric is a proper sale, we should then proceed in completing the negotiations as quickly as we can and not throw them aside.

Senator ANDERSON. Even if you are going to pay too much for wheeling?

Mr. AANDAHL. No.

Senator ANDERSON. What if you do not agree?

Mr. AANDAHL. If we can't get a reasonable wheeling rate we would not enter into such a contract.

Senator ANDERSON. Do you think $700,000 a year on a $3 million investment about right?

Mr. AANDAHL. Dr. Pearl has already asserted that the proposal is not satisfactory.

Senator ANDERSON. They knew this hearing was coming on. They didn't make any effort to get together. They are going to hold the gun at your head. How can you get out of it? You are going to deliver it if they build the line. You agreed to put the juice into it. They say here is the bill. Is there anything in here that you only pay so much as you feel?

Mr. AANDAHL. There will be no agreement until a figure is agreed upon. There will be no contract signed until there is an agreement signed.

Senator ANDERSON. That is the best news some of these people have had.

Mr. AANDAHL. If there is a figure agreed upon it will be a reasonable figure.

Senator JACKSON. Governor, if the committee objects at this time to going ahead with this proposed contract, would the Department of the Interior honor that objection and not proceed?

Mr. AANDAHL. I would expect so.

Senator JACKSON. That is a very fair statement. Thank you.

Mr. PEARL. You were worried for fear we would sign a contract before this hearing and you sent me a wire to that effect. We were worried for fear we would not have this all set up so we could give you the final details and we didn't make it. In other words, we just couldn't have those contracts agreed to and signed. We didn't succeed in doing it.

Senator JACKSON. You see our position. We didn't know. We heard rumors and stories. We tried to be fair about it. We sent a wire relating what information came to us. We wanted it in black and white because we were hearing rumors and stories and we publicized your reply I think both ways.

Mr. PEARL. I hope so.

Senator JACKSON. We released both.

Mr. PEARL. We did reach an agreement with Pacific Gas & Electric and Copco that we would not sign anything until after this hearing. When I received your wire I sent you that word.

Senator JACKSON. We released your reply in fairness and we did not make any dealings against Bonneville that would impute anything that was improper. What we wanted to do was to get the facts. We tried to be fair. I think it was helpful that we found out just what the story was. It is difficult, Dr. Pearl, when you get reports from the Northwest that something is going on. I like to get it down in black and white. I always find there are usually three sides to these questions anyway. I mean your, side, my side and the right side. It was hard to get at.

Mr. GOLDHAMMER. Mr. Chairman, to be fully responsive to the question you asked a minute ago of me, as to the discussion of this transmission contract, or page 4 of the Pacific Gas & Electric proposed

contract, you will note in the third "whereas" clause that this contract contemplates that the Copco transmission contract will be signed prior to the time that the Pacific Gas & Electric contract is executed.

Senator JACKSON. By that you mean the wheeling arrangement. That is what you mean by the word "transmission"?

Mr. GOLDHAMMER. That is right. It states in here that the contract has already entered into. The contract with Copco would be signed first. That was contemplated in the contract.

Senator JACKSON. That contract number so and so is not available because it is not in the agreement.

Mr. GOLDHAMMER. You have the contract. The only thing that has not been in agreement is the charge that has been left blank.

Senator JACKSON. I know but that is the substance of it.

Mr. AANDAHL. You have a working draft.

Senator JACKSON. With a big void. That is very fair.

Mr. PEARL. I would like to show you the type of power that we are proposing to sell by route of this contract. As you know, Bonneville is the marketing agency for the power generated at 12 Federal dams in the Pacific Northwest, and this chart shows the amount of firm power that we have for sale and it is indicated in green. It is indicated in kilowat-hours per year. So the green area is the firm power that Bonneville sells.

In addition to that, we sell what we call interruptible power in our own area. It is our estimate that for the next 10 years we will be able to sell the amount that is indicated here in red per year. So that when you are looking at this chart we will be able to absorb in the Pacific Northwest the total energy up to this line which you see is about 5¼ million killowatts.

The green area above is the power that we are trying to sell. As I told you before, we sell some of this to Idaho, Canada—anybody that can fit it into their load curve. In that there is 10 billion kilowatt-hours. This is an average over a period of 20 years. We have indicated on here the 20 years that we used in making this study. So if we were to sell Pacific Gas & Electric a billion kilowatt-hours, that would be 10 percent of the kilowatt-hours that is available.

Senator ANDERSON. Could you supply the amount you sell to Idaho, the amount you sell to Montana and BC and what you are proposing to sell them?

Mr. PEARL. We are, of course, aware of the fact that we are losing some of our sale for this secondary power. The Idaho Power who were purchasing this power——

Senator ANDERSON. They have built some dams. There is a place called Hells Canyon that we heard about.

Mr. PEARL. Now that you have heard about that I won't have to go ahead. They have excess power now so we have lost the market. I will ask Mr. Goldhammer to look into our little book of facts and tell you how much we are selling them.

Senator JACKSON. Due to an overall decline in the aluminum market there is less demand for the interruptible power.

Mr. GOLDHAMMER. That is right.

Dr. PEARL. About 20 percent of our revenue comes from the sale of this secondary power in the area. The aluminum companies because

of their loss of market and the completion of their stockpiling curtailed almost all of the interruptible power they were taking from us. A third thing that affects this is the temperature. Last year we had one of the mildest winters we have had and we are having another one this winter. That is affecting our sale locally.

Mr. GOLDHAMMER. I don't have the exact figure but, as I recall, the most revenue we got in any one year was half a million dollars from Idaho.

Senator ANDERSON. I am not concerned about that. He says you have about 10 billion kilowatts to sell. How did you sell to these people?

Mr. GOLDHAMMER. Idaho was 250 million kilowatt-hours as the maximum.

Senator ANDERSON. Montana?

Mr. GOLDHAMMER. Montana will buy very little. It will come to probably less than a hundred million.

Senator ANDERSON. BC?

Mr. GOLDHAMMER. The most we have sold into Canada was the previous year when BC Power Commission had difficulty with their dams on Vancouver Island and that came to about a little over 200 million kilowatt-hours.

Senator ANDERSON. So you didn't use much more than a half billion and you had 10 billion that you might sell.

Mr. GOLDHAMMER. That is right.

Senator JACKSON. What about the aluminum companies?

Mr. GOLDHAMMER. When they are operating at full capacity, the aluminum companies will take an average of about 400,000 kilowatts which would be about 3.5 billion kilowatt-hours. That is the big market.

Senator JACKSON. Of the interruptible?

Dr. PEARL. That is right.

Senator JACKSON. Last year that was affected, as Dr. Pearl pointed out, by the decline in aluminum production for various reasons.

Dr. PEARL. Yes.

Mr. AANDAHL. That aluminum use of interruptible power comes in the red area, and not out of the 10 billion.

Senator JACKSON. Don't they sometimes dip into the green area?

Mr. GOLDHAMMER. No.

Senator JACKSON. They never do?

Mr. GOLDHAMMER. No.

Senator JACKSON. What happened last year was that they dipped into the red area. I mean it declined in the red area.

Mr. GOLDHAMMER. We did not sell the red area last year. We are not selling it this year. We probably won't sell it next year.

Senator JACKSON. In connection with this contract, would the aluminum companies of the Northwest still have their first call on interruptible power over and above P.G. & E.?

Dr. PEARL. Yes; they will. If that is not in the contract, we will see that it is altered. We think it should be.

Senator JACKSON. You agree it should be?

Dr. PEARL. We agree it should be.

Mr. GOLDHAMMER. It is in the power policy statement submitted earlier.

Senator JACKSON. What I am getting at is not only the aluminum companies—and it is only industrial users that are involved—that have contracts for interruptible power, and it is your intention that they be given first priority and be given protection throughout any sale or distribution under this contract to P.G. & E.?

Dr. PEARL. Yes; that is correct. To go up to this area up here, I want to show you another chart, to show you the quality of the power we are talking about selling. It is this quality that makes the problem. Here again is this 20-year study and as indicated, the availability each month of the year. If we were to sell 200,000 kilowatts as of the level of development in 1962–63, its availability would be as shown. In July they could get it all. In August 100 percent of the time would be available. In September it starts to drop down, and we get down to November when it will only be 19 percent of the time. Again in May and June it would be available 100 percent of the time.

Senator JACKSON. A third of the year it is 100 percent of the time.

Dr. PEARL. Yes. This is average, now.

Senator JACKSON. Yes; I understand.

Dr. PEARL. I will show you another chart that shows what happens to the man who tries to use it.

Senator JACKSON. Of course, the fellow who gets hooked in the things that make for average when things are not working is in bad shape.

Dr. PEARL. Yes. If we were to sell 400,000 this is the availability, if we were to sell 1 million kilowatts, this is the availability. As of 10 years from now—and again I want to be sure this is in the record—we are proposing a 10-year contract, because we believe in the near future there will be a market for every kilowatt of this in the Pacific Northwest. I am thinking now of the things you mentioned.

Senator JACKSON. Including the nuclear powered reactor.

Dr. PEARL. Yes, nuclear, and Canada plus other storage that might come in the area.

Senator JACKSON. I think this is important. You have made your calculations in connection with the proposed contract based on the possibility of the development of upriver storage in Canada and elsewhere.

Dr. PEARL. That is correct.

Senator JACKSON. Together with the possible power development at Hanford.

Dr. PEARL. That is correct. If we move to 1968–69, and the picture has not materially changed, here is our availability. It is almost the exact duplicate of this, including loads and resources as we see them as of that time. On the next chart we will show you why selling this power is a problem. There are very few people that can use it. We have shown you here flow of water in a critical year, a median month year and a wet year. This is all secondary power. Here I have marked a black line indicating the power reserved for the Northwest. The amount below this is what we will use in the Pacific Northwest. The amount above that is what is available. Let us take a critical year, and this is the one I have shown here in an orange color. When you come down here you will see that it is available July and August, and there is none available until we get to April of next year, and

then very little. So the man buying this, if it is a dry year, would only receive that power 4 months out of the year. For 8 months he would not get a kilowatt. If it were a median month year, then you would look at the blue. You see here it is available. Here it is not available. Here it is not available. Here a little is available. Here some. And when you get over there, there is a lot available.

When you go to a wet year, it is available all the time. The man that buys this must have something that he can integrate it with to take care of his loads when we do not have it.

Senator JACKSON. Does the 20-year study give you a pretty good average?

Dr. PEARL. Yes. It happens in the 20 years we selected here, we did hit our critical year, 1936–37. That is our driest year of record. That is what we call our critical year. If you look at our dates, you will see that it is in there.

Referring to the questions you asked about, who did we contact, and who did we try to sell this to, it is power that is not readily integrated with a system unless the system has an appreciable amount of steam.

Senator JACKSON. Have you given any consideration to a reciprocal arrangement, that is, we have our short period during the winter months, roughly speaking, in the Northwest.

Dr. PEARL. Yes.

Senator JACKSON. Has any consideration been given to carry some of our load during that critical period where we are in a tight spot during a low-water year?

Dr. PEARL. The only consideration that we have given to that we have stated here in one of these documents that I submitted. An emergency is the only one we considered. If we ran into a shortage or a breakdown or any emergency, the power would then be available from California to the capability of our intertie.

Senator JACKSON. I understand. You have a limit on your load capacity.

Dr. PEARL. Yes.

Senator JACKSON. What would be the power charge for what we sell to them and what would be the power charge that we would have to pay in getting return power during a dry year during the winter months? I take it it would be steam-generated power from California.

Dr. PEARL. It could be, or it could be hydro.

Senator JACKSON. There is a mixture, but as far as P. G. & E. is concerned, it is predominantly steam.

Dr. PEARL. Sixty percent, roughly.

Senator JACKSON. What would be the charge?

Dr. PEARL. I am glad to answer this. I want to elaborate a little on it because our charge to them would be our regular rate which has been approved by the Federal Power Commission. Our regular rates include transmission. So when we say that we would wheel the power to the border, that is because our power rates that have been approved include transmission to the load center. Of course, at the border that is the load center because that is the edge of our marketing area.

Now, then, the question of an emergency and what they will charge for the return power I will ask Mr. Goldhammer who has been working on the details.

Mr. GOLDHAMMER. We have our dump rate for emergency sales which provides for sale at 2.5 mills a kilowatt-hour. The contract written with P.G. & E. provides on return of this emergency energy, if it is hydro it will be 2.5 mills a kilowatt-hour. If it is steam, it will be the out-of-pocket cost of the steam.

Senator JACKSON. How much is that?

Mr. GOLDHAMMER. It would depend on the period of the year and type of steam that would have to be used.

Senator JACKSON. In general we know what period we will need it. We will not need it in June, July, and August.

Mr. GOLDHAMMER. In emergency situations there are potentials where you might need it in the spring of the year not due to water shortage you were mentioning, but due to emergency conditions. A couple of years ago we had these lines from McNary blow down on a twister.

Senator JACKSON. What are we most apt to get over a period of years?

Mr. GOLDHAMMER. From around probably at the lowest 4 or 5 mills and you might get power running to a cent a kilowatt-hour.

Senator JACKSON. So it can run from double to four times as much

Mr. GOLDHAMMER. That is right.

Senator ANDERSON. While Secretary Aandahl is here, I want to correct something I said a minute ago. I thought you had a history which was the Missouri basin water problems in May 1, 2, and 3, 1957. I find you submitted documents to us on which our discussion was based, but did not appear personally as a witness. Hence you would probably not remember the point arising. On page 170 I raised it. You may want to comment on this later. One of the exhibits which you sent over on page 341 of the power policy hearings of the Committee on the Judiciary of the U.S. Senate, the Bureau of Reclamation, September 10, 1953, set out the criteria on marketing. It provides that a term of power contract shall be not in excess of 40 years. Contracts will not be made for terms exceeding 20 years unless there are special conditions. It goes on through the recital and in section 7, it refers to the available power will be disposed of in the following priority of consideration: (*a*) Present power commitments; (*b*) request of customers which can be served from present facilities and arrangements; and (*c*) request for power requiring new facilities.

Then section 7(a) lists the existing contracts with preference customers; (b) remaining available power will be allotted to fulfill the requests on first preference-type customers and next nonpreference customers for power for use in areas covered by and which can be supplied from the Bureau of Reclamation transmission lines existing or under construction, or by existing wheeling arrangements.

The explanation was that if the preference customer was offered the power and could not use it, then the Bureau of Reclamation could make a 20-year contract with a nonpreference customer. That is why I pointed out to you that if this contract is entered into, no preference

customer can come in and ask for any preference or rights unless the current is available. This is the underlying document and gets the first right. Do you agree with that or not?

Mr. AANDAHL. No, I do not agree with the application of what you have read from the Missouri basin document to the contract under consideration.

Senator ANDERSON. This is signed by Fred G. Aandahl, September 14, 1953, and is a memorandum to the Secretary of Interior from the commissioner of reclamation, marketing criteria for eastern division Missouri River basin. You think that only applies to the Missouri River basin?

Mr. AANDAHL. That is correct. Incidentally, there have been no contracts in the Missouri basin with nonpreference customers. Preference customers have used all of the power we have in the Missouri basin except a small amount that is purchased by Montana Power Co., and that is purchased on a short-time contract. So it will be available for the preference customers when it is needed. There has been no application of the principles that you have just read.

Senator ANDERSON. I do not understand how you have a power policy for one basin that does not apply to another basin. This is the policy of the Bureau of Reclamation.

Mr. AANDAHL. No, that is the Missouri basin power marketing criteria. It is not a Bureau-wide criteria.

Senator ANDERSON. Therefore, the sale of power from the Glen Canyon Dam will not be on this basis?

Mr. AANDAHL. Not in any way related to it.

Senator ANDERSON. Are we making policies or improvising and playing by ear as we go on?

Mr. AANDAHL. No. There are varying circumstances and conditions under which marketing criteria are established for the different areas.

Senator ANDERSON. I think we better resume at 2 o'clock.

(Thereupon at 12:30 p.m., a recess was taken until 2 p.m., the same day.)

AFTERNOON SESSION

Senator ANDERSON. The committee will be in order.

Senator Jackson.

Senator JACKSON. Mr. Chairman, I have the letter here addressed to you as the chairman of the subcommittee from the Governor of the State of Washington. The letter was brought to the committee by Mr. Earl Coe, who is the director of the State department of conservation, and Mr. Francis Pearson, chairman of the public service commission. They are here and will be available for any questions that may be asked and if the situation should arise they may desire to testify. They will be here throughout the hearings.

The letter states the position of the State of Washington on this matter rather clearly. I won't take the time of the committee to read it. It speaks for itself. I ask that it be placed in the record at this point.

(The letter referred to follows:)

STATE OF WASHINGTON,
EXECUTIVE DEPARTMENT,
Olympia, April 6, 1959.

Hon. CLINTON P. ANDERSON,
Chairman, Subcommittee on Irrigation and Reclamation, United States Senate, Senate Office Building, Washington, D.C.

DEAR SENATOR ANDERSON: Reference is made to your letter of February 27, 1959, informing me of hearings to be held on the proposed electric power transmission tie line between the Pacific Northwest power pool and California, before your Subcommittee on Irrigation and Reclamation on April 8 and 9.

In view of the importance of this proposal to the economy of the State of Washington, we are pleased to have your invitation to participate in the hearings. Mr. Earl Coe, director of the Washington State Department of Conservation, and Mr. Francis L. Pearson, chairman of the Washington State Public Service Commission, will be in Washington for the hearings. They plan to be in regular attendance in order to be informed on the testimony of others, and will have a short statement to make for the record, in addition to this letter.

The interest of the State of Washington in a power tie with California lies in the extent to which such sale of some of our surplus seasonal energy can contribute to revenues of the Bonneville Power Administration, and thus move to reduce Bonneville Power Administration's operating deficits and become a factor in holding down power rates in the Pacific Northwest.

Informally, we have been told that the Bonneville Power Administration is currently negotiating with California interests for a 230-kilovolt-ampere line, which would permit sale of up to 200,000 kilowatts of generation to California. Our understanding is that such power would be a displacement seasonally for existing steam generation in California, and would be subject to right of recall at any time the power is needed to meet Northwest requirements. Assuming the sale price of the power would not return less revenue per unit of sale to the Bonneville Power Administration than that derived from similar power sold to Pacific Northwest users, and assuming that our information as outlined above is correct, we would be inclined to look with approval upon this type of proposal.

Meantime, the State of Washington has joined with the States of Oregon and California in further study of the economic aspects of a California tieline. Until our findings are completed, we suggest that no further arrangement for sale of power to California be made. We expect our findings to be available by the end of this calendar year.

I am informed that the representatives of the Governors of Washington, Oregon, and California, who met in Salem, Oreg., in early March and in Sacramento, Calif., on April 3, are in agreement to the effect that any sale of Pacific Northwest power to California must be on a right of recall basis. With this I fully concur.

In this connection, I am most pleased with the very splendid attitude taken by Gov. Edmund G. Brown of California in his letter to me on this subject, dated March 25, 1959. Governor Brown stated:

"In connection with the topic with respect to which our representatives will be holding discussions, I understand that certain misgivings exist in some minds in your State as to the possibility of California depriving the State of Washington of power which might be required for your own development. I wish to assure you that California does not desire such a result. As Governor of this State I recognize that California is not within the primary service area of the Bonneville Power Administration, and that any electric energy we receive from that source must be subject to the first call by the service area the project originally was intended to serve. We are willing, in the event it is determined to be feasible for California to utilize the energy, to provide such assurances as may be necessary to allay the fears which have been expressed."

In our judgment, as long as any Federal legislation relating to a California tieline with the Pacific Northwest power pool fully protects the right of recall of such power for the Pacific Northwest, we feel our economic and development needs will be protected. The necessary aspects of such right of recall, and to insure that such recall is at all times feasible, would require:

(1) All power sold to California must be surplus seasonal power, and the generation of such power must at no time be permitted to interfere with seasonal water storage operations necessary for effective management of the Pacific Northwest's electric power and irrigation resources.

(2) All power sold to California should be on a basis of seasonal displacement of steam generation in California. The delivery of power over and above California's own generation resources could seriously interfere, in some critical power year, with the Pacific Northwest's right of recall.

(3) If the tielines are constructed with public funds, distributors or consumers of such power in California should be excluded from preference clause provisions applying to public agency consumers for Federal power in the Pacific Northwest. Unless preference clause provisions are removed for such power sold to California, the right of recall could be meaningless.

(4) Finally, and most important, we must at all times recognize that priority on the generation and use of Pacific Northwest surplus power must be in terms of its ultimate availability in connection with the development of upstream water storage in British Columbia. In the long run, the factor most important to the adequacy of firm power supply in the Pacific Northwest, and to minimum costs in our power rate structure, is the benefit to be derived from upstream storage.

I am pleased to have the opportunity to place on the record for consideration by your subcommittee the above factors which we regard as important to any arrangement for sale of Pacific Northwest surplus power to California.

In the meantime, I commend Governor Brown of California and Governor Hatfield of Oregon for their participation with me in our three-State studies of the broad economic aspects of a California power intertie. I respectfully suggest that the Congress take no final legislative action on construction of a major intertie until our three-State findings have been concluded. This request is made in order that the economic interests of the people of the State of Washington may be fully protected.

Sincerely yours,

ALBERT D. ROSELLINI, *Governor.*

Senator ANDERSON. Mr. Secretary, Mr. Lineweaver and I were discussing two points that were brought up this morning with reference to different approaches of the power marketing criteria applying to Bureau of Reclamation and Bonneville. Several months ago I asked for a report from the Department of the Interior for the power marketing criteria that would be established for the Upper Colorado River storage project. If the Department is not prepared to answer on this power marketing criteria, could you submit a full statement to us to be incorporated in the record and could you clear with Mr. Lineweaver so that you cover exactly what he had in mind on it?

Mr. AANDAHL. I will be glad to do that. The completeness of the answer, however, would depend somewhat on the nature of the questions that are asked because Upper Colorado is still in the planning stage and there is uncertainty about a number of factors associated with the marketing of that power.

Senator ANDERSON. Would not the criteria be much the same?

Mr. AANDAHL. I think you can take the basic power policy statement issued by the Secretary on August 18, 1953, and I think the principles that are involved there would still apply. However, that has not been reviewed lately and we may run into circumstances on the Upper Colorado that will require further consideration.

Senator ANDERSON. I will just read this letter again. It is dated January 6, 1959, addressed to Hon. Fred A. Seaton:

My attention has been called to a conference held in Assistant Secretary Aandahl's office on December 16, 1958, with Under Secretary Elmer Bennett and other officials with representatives of the Upper Colorado River preference users committee, with respect to the Department's program for power marketing facilities in connection with the Upper Colorado River project.

It is my understanding that the Department reported at the conference that an indication of the program would be made available about March 1 or soon thereafter. The points raised by the group in the conference, as I under-

stand them, were (1) the market area to be served, (2) some determination of the transmission system required including line size and location, (3) some definition of location of load centers, and (4) some allocation of power to users.

In addition the time is at hand for decision on the construction agency for the transmission system. That is to say, whether the private companies are to build as they promised the Congress or whether the magnitude of the preference demand will require Federal construction of the backbone transmission system. In view of the importance of an early indication of the Department's position on this problem, I would appreciate being advised as to the program of the Department review of the situation and when its findings will be available to the subcommittee on irrigation and reclamation.

So far as I know there has been no reply to that.

Mr. AANDAHL. I would be of the opinion that the most that would be available would be an acknowledgment and an indication that we would reply as soon as we could get the information.

(Mr. Aandahl subsequently submitted the following memorandum:)

It has long been the purpose of the Department of the Interior to establish as nearly uniform as possible marketing criteria in its several power marketing areas. There are many factors, however, that require variations.

Authorizing legislation is not uniform. The Bonneville Project Act, Flood Control Act, Hoover Dam Act, and the Hungry Horse and Big Bend legislation all contain provisions for marketing power which reflect special situations under consideration at the time the legislation was enacted. These differences indicate the desirability of adopting criteria taking into account varying local conditions existing in the areas where the particular legislation is applicable.

Appropriations for implementing the marketing programs are influenced by the attitude of the congressional delegation from the affected area.

There is appreciable difference in the characteristics of Federal hydroelectric plants. Some are built for low load factor power and need to be integrated with non-Federal thermal power in the area. Bonneville is in an almost exclusively hydro area and the system has high load factor power.

In the different areas customer requirements vary. Some areas are predominantly domestic and rural, others are heavily industrial.

Senator ANDERSON. Very well. Dr. Pearl, will you resume, please.

STATEMENT OF WILLIAM A. PEARL, BONNEVILLE POWER ADMINISTRATOR—Resumed

Mr. PEARL. Yes, sir.

To sum up our proposal, we have been looking for a market for a power of the quality that I described this morning. That is a power that is in some years only available 3 or 4 months out of the year. To find a market for that is not too easy. It would appear from some of the testimony as though we had deliverately hunted up one company and were just dealing with them. This power is available that is in excess of the needs of the Bonneville marketing area and subject to the preference clause and is available as far as we are concerned at Bonneville to anyone that could use the power. We did considerable checking. We determined in other areas, such as northern California, the type of generation that the preference customers had there.

Senator JACKSON. At that point, Dr. Pearl, do you know offhand what the requirements are for the Central Valley system for summer pumping?

Mr. PEARL. No, I don't. We checked to find out their power consumption and their source of energy and the type of generation they use, and I have all that available. I had Mr. Goldhammer get that together so I would know if power such as this could fit into their pic-

ture. When you talk about pumping power, it did not seem to me as though that was anything that we could or should check because when you are pumping you can't pump 3 months out of the year and quit for the rest of the year.

Senator JACKSON. Is there not a heavier requirement for summer pumping in the Central Valley system?

Mr. PEARL. If you think of the area as a whole, the power in the summer apparently is roughly between 4 and 5 percent greater than in thte winter. So their summertime load is heavier than their wintertime load.

Senator JACKSON. If we can have that data in the record at the proper time, I think it ought to be in because there is a pumping problem there that is created in the summer months.

Mr. LINEWEAVER. There is a Central Valley man here.

Mr. PEARL. There is a man here who should answer that question, instead of Bonneville.

Mr. FLEMING. We don't have the consumption month by month.

Senator JACKSON. Can you get the information and supply it for the record?

Mr. FLEMING. Yes, sir.

Senator JACKSON. I think it is quite pertinent in connection with this matter because we are talking about the power that would be available during the same period.

(The following table was subsequently submitted:)

Central Valley project pumping, years 1953 to 1958, inclusive

	Kilowatt-hours in thousands					
	1958	1957	1956	1955	1954	1953
January	1,223	1,592	786	840	1,919	667
February	1,352	13,205	2,760	4,976	11,908	2,746
March	4,282	25,259	6,093	21,807	15,588	8,662
April	2,157	31,030	9,055	30,075	26,709	19,671
May	8,115	29,816	5,823	33,604	18,497	29,920
June	10,393	43,575	15,799	42,266	39,639	30,790
July	40,197	49,121	44,098	44,251	44,895	39,830
August	43,461	43,439	40,859	42,553	40,106	34,210
September	25,651	26,282	22,349	25,865	24,723	11,389
October	17,477	15,011	10,232	16,502	12,667	6,263
November	7,855	7,033	1,660	5,899	3,623	1,076
December	2,636	2,498	1,831	2,901	838	955
Total	164,799	287,861	161,365	271,539	241,112	186,179

Senator ANDERSON. I read through the statement of progress and one point struck me here. I will read it to you and maybe you can explain it.

In December 1958, the Administration telephoned Central Valley Bureau of Reclamation officials in Sacramento to ascertain whether a sale of Bonneville surplus secondary energy to northern California utilities would, in any way, affect the Bureau's activities in northern California.

That is something different from finding out if the Central Valley people wanted to buy current.

Mr. PEARL. Yes. You understand, of course, that the Bonneville marketing area we consider stops at the border. We consider that Reclamation's marketing area is south of the Oregon border and our area is north.

I felt I should check with Reclamation before we proceeded with any negotiation insofar as selling power in the area is concerned.

Senator ANDERSON. The next sentence reads:

At that time the Bureau of Reclamation officials advised that on the face of the proposal it did not appear that it would interfere with Bureau relations with Pacific Gas & Electric Co.

Do I understand that the Bureau of Reclamation has to consult the Pacific Gas & Electric whether it can bring current to the Central Valley authority?

Mr. PEARL. That is a question I would rather let them answer.

Senator ANDERSON. This is in your statement.

Mr. PEARL. Yes. That is the statement they made to me over the phone.

Senator ANDERSON. The Bureau told you that they did not know of anything that would interfere with their relations with Pacific Gas & Electric, which had been cordial. It is not your statement, it is theirs, I grant you.

Mr. PEARL. We are now proposing to sell secondary interruptible power of the quality that I explained this morning on a 10-year basis at our regular rates and delivering it to the border of our marketing area. I think I have covered our overall proposal now in sufficient detail that maybe the rest we could cover by way of questions that you might have.

Senator JACKSON. I have just one question that I meant to ask and I neglected to ask.

In connection with the line that was sold to Copco from Yamsay to Klamath Falls, we were talking about payout. That is, the wheeling charges. I believe I confined my question entirely to the power that would be wheeled over the line for Bonneville in connection with the sale of power in the intertie. Their proposal—not yours—would in effect mean that they would get repayment in about 3 years at $700,000 a year. I did not ask at that time whether any other use of the line was being made.

Mr. PEARL. In making these calculations, we have assumed that two-thirds of the capacity of the line would be used for the wheeling and one-third for the other uses that you are referring to.

Senator JACKSON. If I may push this point a little further, not only their proposal—and I again emphasize it is not your proposal—their proposal would mean that wheeling this power in connection with the intertie that they could get repaid in 3 years and still have one-third of the line for their use. I don't know.

Senator ANDERSON. That is private enterprise.

Senator JACKSON. They are a business affected with the public interest which was referred to once upon a time in a utility course I took. I wonder where conscience comes in. They still have one-third of the line for their own use and to amortize in connection with their own operations, but only using two-thirds of the line, Mr. Chairman, under their proposal—and I am glad that Bonneville did not agree on that, it is a matter of negotiation and difference of opinion, I take it—they would still have a third of the line for their own operation. They are getting their money out pretty fast in this deal they made in 1953 is all I can say. That is a fantastic story.

Mr. PEARL. There is one item and maybe I should not mention this, but you are talking about the money they paid for the material. The line was not up yet.

Senator JACKSON. The Congress appropriated the money, it was authorized. The action taken in the 82d Congress in 1951–52—I was on the House Appropriations Interior Subcommittee at the time—we appropriated the money for the line, they were directed to build the line but in 1953 there was a change in the administration and the whole thing dropped and left there. I submit the Government is now reaping the effect of what occurred back in 1953.

Senator ANDERSON. I do think we would have to say that there probably was a substantial amount of additional expense in putting up the line and installing it. Probably if Copco is going to testify here they can tell us what their figures show.

Senator JACKSON. I wanted to know the total cost. I want to be fair about it. We ought to get the total cost figures, Mr. Chairman.

Senator ANDERSON. Have they submitted any figures to you as a basis for the wheeling charge?

Mr. PEARL. We have discussed figures with them.

Senator ANDERSON. What did they say it cost him?

Mr. GOLDHAMMER. I have that figure. There are three parts. There is the line from Yamsay to Klamath Falls.

Senator JACKSON. That is the line that was under construction that they purchased.

Mr. GOLDHAMMER. That is right. The cost was $2,437,000.

Senator JACKSON. That is what they paid?

Mr. GOLDHAMMER. That is right.

Senator ANDERSON. Is that what it cost them in the aggregate?

Mr. GOLDHAMMER. That is the aggregate cost to them

Senator JACKSON. That was not a great deal more.

Mr. GOLDHAMMER. That is all of it. That does not include the substation because it is not used in this transaction.

Senator JACKSON. How much did the Federal Government receive from Copco?

Mr. GOLDHAMMER. It would also have included the amount for the substation. I think somebody is getting that together to have it available in the morning.

Mr. PEARL. We have that available and can have it.

Senator JACKSON. Let us get that later when we meet again. Anyway, the cost of construction, actual assembly and to put it into operational condition, was not a great deal, Mr. Chairman, over and above what they paid.

Mr. PEARL. This is just the line. They bought substation material, too.

Mr. GOLDHAMMER. The second part of it is the new facilities that they would have to put in to complete the interconnection to California. They estimated those at $1,030,000.

Senator ANDERSON. That is where to where?

Mr. GOLDHAMMER. From Klamath Falls to the border.

Senator ANDERSON. P.G. & E. will take from the border?

Mr. GOLDHAMMER. Yes. The third part which they also are assuming are the losses on the approximately 80 miles of line from Yamsay to the border. They made an analysis here.

Senator JACKSON. You mean line loss?

Mr. GOLDHAMMER. They will make up the line losses.

Senator JACKSON. They are going to guarantee the delivery of the power to the border?

Mr. GOLDHAMMER. They will deliver to the border.

Senator JACKSON. The same amount they get at Yamsay?

Mr. GOLDHAMMER. Yes. There are losses in between.

Senator JACKSON. That is a matter of engineering computation. I understand that.

Mr. GOLDHAMMER. They have assumed an annual cost ratio on these lines of 18 percent.

Senator ANDERSON. So much on the investment.

Mr. GOLDHAMMER. That is right. Eighteen percent on the investment is the way they calculate.

Senator JACKSON. What is the actual cost on the line loss?

Mr. GOLDHAMMER. The line loss they estimated at 4¼ percent.

Senator JACKSON. Of the total investment?

Mr. GOLDHAMMER. No, of the power.

Senator JACKSON. How much is that in dollars?

Mr. GOLDHAMMER. If we take a billion kilowatt-hours we were talking about before, that means the line losses would be 42 million kilowatt-hours, approximately, or if you evaluate them at 2½ mills a kilowatt-hour, which is what they would pay us for it, it would be about $93,000.

Senator JACKSON. A year?

Mr. GOLDHAMMER. Two and a half times 42 would be close to $100,000 a year.

Senator JACKSON. We are talking then about $3,525,000 as a total.

Senator ANDERSON. No. One is an annual charge and one is a capital charge. $3,430,000 is the capital charge on which they want 18 percent.

Mr. GOLDHAMMER. They said that their annual costs run about 18 percent.

Senator ANDERSON. Of which part is interest and maintenance.

Mr. GOLDHAMMER. Operation and maintenance 3 percent, depreciation and amortization 3 percent, all taxes 6 percent.

Senator ANDERSON. You mean they pay 6 percent?

Mr. GOLDHAMMER. They have 2 percent property taxes, 4 percent income taxes. Return on their investment 6 percent.

Senator JACKSON. Then they have the use of a third of their line?

Mr. GOLDHAMMER. In their calculation they took that off.

Senator JACKSON. They deducted that?

Mr. GOLDHAMMER. Yes. They took off the one-third on the facility that they purchased and they took the full amount on the new facility that would be built between Klamath Falls and the border. The new facility would be used exclusively for the intertie.

Senator ANDERSON. Twelve percent on $2,400,000?

Mr. GOLDHAMMER. Yes, that is right.

Senator ANDERSON. About $285,000.

Mr. GOLDHAMMER. That is right.

Senator ANDERSON. Then 18 percent of $1,030,000, which is approximately $185,000.

Mr. GOLDHAMMER. That is right.

Senator ANDERSON. Then $95,000 line loss.

Mr. GOLDHAMMER. That is right.

Senator ANDERSON. That gives them a total figure of $565,000.

Mr. GOLDHAMMER. A little under $600,000. The reason this will come less, their discussions with us is that we take this in power. Instead of our delivering a billion kilowatt-hours a year to Pacific Gas & Electric, they would take the amount that would be represented by these power figures. So our deliveries would be about 800 million and their deliveries would be around 200 million, or something of that order. That is how they calculated it.

Senator ANDERSON. Doctor, do you have anything more?

Mr. PEARL. No, sir; unless there are some questions.

Mr. GOLDHAMMER. There is one thing I would like to add to a statement made just before lunch on the questions you were asking me relative to the emergency power. There is also a clause in the contract as one of the methods of payment of an exchange for power if the two parties have the power to exchange, whether it is steam or hydro. They might supply us steampower and we might return hydropower under the terms of the contract if it is agreeable between the two parties on an emergency basis.

Senator JACKSON. It is a unilateral arrangement. It is not a bilateral requirement. They don't have to.

Mr. GOLDHAMMER. We don't have to, either.

Senator JACKSON. I know, but we will be delivering all hydropower, obviously.

Mr. GOLDHAMMER. Because we don't have anything else to deliver.

Senator JACKSON. Unless there is some nuclear power later.

Mr. GOLDHAMMER. That is right.

Senator JACKSON. At this time it is all hydro?

Mr. GOLDHAMMER. That is right.

Senator JACKSON. The chances are that the only thing that California could send back—I mean the probability—sending back steam-generated power.

Mr. GOLDHAMMER. That is right. Even if it is steam-generated power the contract provides for three bases for exchange. One of them is that in short-time emergencies it would be a kilowatt-hour for kilowatt-hour regardless of whether it was steam or anything else. If they deliver the power and we could return it within 90 days it would be a straight exchange whether it was steam or anything else.

Senator JACKSON. I understand that.

Now, go on to the next one.

Mr. GOLDHAMMER. Then we have the other problem. If we get beyond this 90-day period then we have an exchange which may be hydro for hydro or hydro for steam. Then you have this other proposition that I was discussing this morning.

Senator JACKSON. As an operating proposition, it seems quite clear to me that we are going to find ourselves in a situation here, unless there is some complete reciprocity—I am speaking now whether it is the Federal or the private intertie—that we will be selling the low-cost power and if you get into any period of time and we will receive from them high-cost power.

Mr. GOLDHAMMER. Providing we needed that power.

Senator JACKSON. Yes.

Mr. GOLDHAMMER. Under the present load situation it doesn't appear that we would need it unless we had a short emergency situation in the next 5 years.

Senator JACKSON. It is so hard to predict the future.

Mr. GOLDHAMMER. That is right.

Senator JACKSON. It is hard enough in many areas and especially in this area. We missed the boat. I have followed the Bonneville system for a long time. No matter how conscientiously and how well equipped we are with good people, it is pretty hard, don't you agree?

Mr. GOLDHAMMER. I agree.

Senator JACKSON. There are many, many changes in the industrial picture and the climatic situation so that all of these factors can come to bear at one time. The gods of luck go against you and you get it in one heap. This past year we had the recession on our hands and the aluminum picture changed overnight and it really came at a time when we had plenty of power and we had to let it go down the river.

Senator KUCHEL. Dr. Pearl, the negotiations leading to the preparation of this contract, did they proceed under your direction?

Dr. PEARL. Yes.

Senator KUCHEL. In view of the apparent interest by the State I represent, California, in the purchase of electric energy from the Government, and in view particularly of the letter which the Governor of California wrote and a copy of which I put in the record, would you be able to tell this committee whether or not you would wish to approve this contract from the standpoint of the Government now.

Mr. PEARL. You mean the State rather than the Government?

Senator KUCHEL. In view of what you have been hearing since we started this hearing this morning.

Mr. PEARL. Yes, I understand your question now. The contract that we have drawn up with P.G. & E. we are pretty well in agreement on all phases.

Assuming now that some of the things that came up this morning, that you questioned whether they are in the contract, we think they are in there. If we are not sure they are in there I want the contract reconsidered and checked to be sure that those things are in that we think are in, that is No. 1. No 2 is that I am not ready to sign the contract for wheeling because we have not arrived in agreement.

Senator KUCHEL. Passing the problems involved in the wheeling for the moment, what specific things do you now believe ought to be included in this contract that are not in the contract.

Mr. PEARL. The preference clause that is in the Bonneville Act we do not have a contract that I know of that does not have that well clarified. What I am saying to you is this: We do not have a contract with a private utility that does not have the pull-back clause in it. Our contracts all stipulate that the preference customer has the prior claim on the power. I think that is stipulated in our contract the way it is written. All I am saying to you is that I want to be sure that this is in keeping with the Bonneville Act.

Senator KUCHEL. To that extent questions being asked about that particular problem, you are inclined to think that the more direct reference should be made to that section of the statute.

Mr. PEARL. If there is any question about it, it should be more direct.

Senator KUCHEL. Are there any other questions that you have in your mind now about the advisability of your approving the contract from the standpoint of the Government?

Mr. PEARL. Our contract basically says the availability is at the discretion of the Administrator. That is the type of clause that Bonneville uses and has used for some time. It is our opinion that this interruptible power, no matter who we sell it to, can be curtailed on short notice. Basically that is the result of the flow of the river.

Senator KUCHEL. Is this not also true, that you would consider the State a public agency for the purpose of qualifying for the preference clause of the Bonneville power legislation?

Mr. PEARL. Yes.

Senator KUCHEL. If the State of California were to ask for an opportunity to purchase any surplus electricity, you would want the contract that you have before you now prepared in such a fashion that there be no problem about your being able to comply with the desires of the State as against the private utility. Is that not true?

Mr. PEARL. I would rather have that question answered by the Solicitor's Office because that always brings up a problem that really is a legal problem. I feel that question has been proposed at Bonneville a number of times and we have repeatedly referred this to the Solicitor's Office for an opinion.

Senator KUCHEL. Quite aside, however, from the Solicitor's Office—and I would like to have his views on that problem—I thought it was your position, Doctor, that as a policy matter you would want the cancelability of that contract so clear that it could be canceled on your responsibility if a public agency like the State of California would apply.

Mr. PEARL. If a preference customer came along the answer is, "Yes."

Senator KUCHEL. What is it then that you want from the Solicitor General to help clarify this problem?

Mr. PEARL. There has at all times been a question regarding whether a State power commission is a preference customer.

Senator KUCHEL. I see.

Mr. PEARL. There is an item in there of what they do with the power that seems to cloud the issue. The minute that they are defined as a preference customer then my answer is easy.

Senator JACKSON. I think if the question was put as it was this morning, if I may interject at this point, assuming that the power is sold to the State of California and the State in turns sells it to the public bodies for irrigation purposes there is no question.

Mr. PEARL. Then there is no question.

Senator KUCHEL. Or if it is required to utilize itself in its own public system.

Senator JACKSON. I don't think there would be much question for State purposes.

Mr. PEARL. I don't think so.

Senator JACKSON. If the State turned around an sold it to a private body, then you would have it.

Senator KUCHEL. I am inclined to think, Mr. Chairman, if the Solicitor of the Department would confirm what has just been

agreed upon around this table it would be helpful. There should not be any question of what the intention of the Congress is in that field. If there is, one way or the other it ought to be legislated.

Senator ANDERSON. Secretary Aandahl, would you undertake to get from the Solicitor of the Department of the Interior an answer to that question? We will supply you with the hearings.

Mr. AANDAHL. Yes.

(The following memorandum was subsequently received:)

The Interior Departments' Solicitor's Office subsequently confirmed that with reference to conditions stated in the questions put by Senator Jackson and Senator Kuchel (purchase of power by the State of California for resale to public bodies for irrigation purposes and purchase for its own use) the State's status as a preference customer would not be open to question.

Senator JACKSON. Dr. Pearl, I know you are in a position to answer this. I am not. I am curious about the engineering of this line.

If you are going to dispose of what amounts to about a billion kilowatt-hours, which is what we are talking about, roughly, is the proposed line, from the engineering point of view, as indicated in this contract, a 230-kilovolt line, the best way to handle that amount of load.

Mr. PEARL. Yes. This line will handle the 1 billion kilowatt-hours in accordance with the availability we have shown you on the chart. We can handle over that line that amount of power and perhaps more. We feel pretty sure that be can handle a billion kilowatt-hours over it. The reason I keep referring to availability is that if you send a flat number of kilowatts every day in the year it would not take nearly as big a line as when you send a large amount this month and a little this month. It has to average out.

Senator JACKSON. I understand.

Mr. PEARL. That line is the cheapest route by which we can get that much power out of our area to a potential market.

Senator JACKSON. I think the first thing we need in connection with any policy decision—that is why I think the study is so essential—is to get the engineering facts. Even the politicians or the power companies, public or private, cannot argue with engineering facts. I am very much interested in getting that engineering data so that we can properly understand it. I had the impression that the interconnection would not be adequate to take care of the potential load that would be available should that decision be made from the Bonneville system. You say, and you are a good engineer, that this interconnection which involves a 230-kilovolt line, could do the job?

Mr. PEARL. Yes.

Senator JACKSON. Based on the characteristics of the surplus in the Bonneville system?

Mr. PEARL. I would like to have you add the two. Our study is based upon the present line and the new line. The two lines will handle the 1 billion kilowatt-hours.

Senator JACKSON. There is a 120,000?

Mr. PEARL. Yes.

Senator JACKSON. And there will be a 230?

Mr. PEARL. Just roughly, that 120 will carry about 50 megawatts and the 230 will carry about 150 megawatts, therein giving us 200

megawatts. In other words, when you change that from kilowatts to kilowatt-hours based on this availability, it will be about 1 billion kilowatt-hours. It is possible that the line could be crowded or loaded a little heavier and run up a little more than that, but we are sure of that amount.

Senator JACKSON. As an engineering matter, it can carry up to a billion kilowatt-hours?

Mr. PEARL. Yes, sir.

Senator JACKSON. It is conceivable from an engineering standpoint that it might have a capability of exceeding the 1 million figure at times?

Mr. GOLDHAMMER. When Mr. Pearl is talking about a billion, he is talking about the average.

Senator ANDERSON. That is the question I was going to ask. If the total capacity is 50 and you translated that total capacity to carry a billion; if it is going to carry a billion it will be done parts of the year. How much have you agreed to sell them?

Mr. PEARL. We know the capacity of the line and our present thinking is that they will take about a billion killowatt-hours a year average.

Mr. GOLDHAMMER. In some critical years they will be down to half a billion and on a wet year they will be up to a billion seven hundred thousand.

Senator ANDERSON. He said one line, the 120-kilovolt line would carry so much and he said the 230 would carry so much and added the two together and got a billion capacity.

Mr. PEARL. No, I got 200 megawatts and when I converted that to kilowatt-hours, based on that availability in the average year, it will carry 1 billion kilowatt-hours.

First I am talking about kilowatts and then I shifted to kilowatt-hours because kilowatts is what a line will carry. If a line will carry 200,000 kilowatts, and it does it every hour in the day and every day in the year, you have a terrific figure. But it is not available that way. Part of the year it will carry 200 and maybe part of a hundred and maybe part 50.

Senator ANDERSON. Would you mind stating what the two lines would carry if steadily used.

Mr. GOLDHAMMER. A billion seven hundred million kilowatt-hours.

Senator ANDERSON. So that you are hoping to sell them a billion on a line that will carry 1,750 million, and the reason you need the larger line is because you don't deliver it regularly to them?

Mr. PEARL. That is correct.

Senator ANDERSON. You are looking toward an average figure?

Mr. GOLDHAMMER. That is right.

Senator JACKSON. At that point, can you carry the peak load which would occur during June, July, and August, I suppose?

Mr. PEARL. That is a function of their ability to use it and not our ability to deliver it.

Senator JACKSON. I am not talking about their ability to use it. Will the line capacity be sufficient to carry it?

Mr. PEARL. The line capacity will be.

Senator JACKSON. That is what I am getting at.

Mr. PEARL. Whether they can use it is another question.

Senator JACKSON. Are there engineering problems in California that would prevent their getting that power to their requirement centers?

Mr. PEARL. P.G. & E. men are here in the audience and they could better answer the questions than I could.

Senator JACKSON. I think that is one of the things we want to know, Mr. Chairman, because while the line may be able to carry it, if they can't actually purchase it for the reason they can't distribute it, even though they have customers that may need it, then we haven't achieved the objective.

Senator ANDERSON. I asked the Copco people to come in and testify. They did not see fit to do so. Is there a possibility that they are not in agreement with this as far as you know?

Mr. PEARL. No. I didn't know that you had requested them.

Senator ANDERSON. Let me go to this contract again now.

On page 5 of the contract, subject to other provisions contained herein. It runs for 10 years, provided, however, at the end of that 10 years you can continue it for another 10.

Mr. PEARL. No. From year to year.

Senator ANDERSON. I understand it is from year to year. The agreement shall be in effect until terminated by either party. I am not sure you have said it the way I would like to say it. You say it is from year to year. May I read the contract to you?

Provided, however, That at the expiration of such 10 years this agreement shall continue in effect until terminated by either party upon 1 year's notice.

Is that from year to year or 10 years?

Mr. PEARL. It will come out the same in either case. Either one could terminate any time during the 10 years.

Senator ANDERSON. I did not ask you that. Is that for 10 years more or from year to year?

Mr. PEARL. We can't sign any contracts for over 20 years.

Senator ANDERSON. I understand that; 10 years plus 10 years makes 20. My arithmetic goes that far. Is this for year to year or is it for another 10 years?

The only way it is terminated is by a 1-year written notice?

Mr. PEARL. That is right.

Senator ANDERSON. In ordinary terms of a lease it is regarded as a 10-year extension?

Mr. PEARL. That is right.

Senator ANDERSON. Provided that the Administrator may cancel this contract after 5 years written notice in accordance with section 5(a) of the Bonneville Act as amended.

You would understand that this 5-year cancellation applies to the first 10-year period as well as to the second 10-year period?

Mr. PEARL. Yes.

Senator ANDERSON. And the provision in the law is that the Administrator may cancel such contract upon 5 years' notice in writing if in the judgment of the Administrator any part of the electric energy purchased under such contract is likely to be needed to satisfy the requirements of said public bodies referred to in this act.

Therefore, you feel if you thought some public body was going to need it you could serve 5 years' written notice that at the end of that 5 years they might have a chance at this power?

Mr. PEARL. That is correct.

Senator ANDERSON. I am better satisfied with your statement since there is a lot of it there to be disposed of and far more than thus far you have been able to sell. As I understand it, you have never come close to using up the full surplus capacity.

Mr. PEARL. Of the secondary power, we have not.

Senator ANDERSON. Senator Engle.

Senator ENGLE. What is the P.G. & E. going to pay for this power, Dr. Pearl?

Mr. PEARL. Our standard rates. It will be either the H–3 rate or the C–4 rate. Our C–4 rate can be applied as an interruptible rate and that is $1.46 per kilowatt per month and the other rate is our regular dump rate and that is 2.5 mills per kilowatt-hour. It will be on one of those two. The thing that determines which it will be on is their ability to take the power.

In other words, their load factor. If they can take this at a high load factor they will come under the C–4 rate, that is $1.46 per kilowatt-month.

Senator ENGLE. What is that per kilowatt-hour?

Mr. PEARL. Two mills at 100 percent load factor.

Senator ENGLE. Otherwise it will be 2½ mills.

Mr. PEARL. Yes.

Senator ENGLE. But the Bonneville system will pay a wheeling charge, will it not?

Mr. PEARL. These rates include wheeling.

Senator ENGLE. When you say they include wheeling, do you mean that they do now?

Mr. PEARL. Our Bonneville rates are set up to cover the power and taking the power to load centers.

Senator ENGLE. I understand that. You are going to have a special arrangement in Copco in which you are going to have to pay Copco for wheeling. I am trying to find out whether you are not actually selling this power to P.G. & E. at less than your own people are paying for it, as far as Bonneville is concerned. In other words, you will have to deduct the amount you pay for wheeling. So the net to Bonneville is going to be less than 2 or 2½ mills, isn't that right?

Mr. PEARL. That is right. This is gross and after we deduct the wheeling charge the net to Bonneville will be this less the amount that we have to pay for wheeling.

Senator ANDERSON. Could you estimate that?

Mr. PEARL. We can't agree.

Senator ANDERSON. Suppose you deliver them a billion kilowatts.

Mr. PEARL. Let us say that the wheeling is five-tenths of a mill. If they were on our C–4 rate our gross would be 2 mills and our net would be 1½ mills per kilowatt-hour.

Senator ANDERSON. Is that what the other purchasers in the Bonneville area get?

Mr. PEARL. Yes.

Senator ANDERSON. Do they pay 1½ mills?

Mr. PEARL. It depends on wheeling. We have other wheeling contracts where we sell power similar to this and we pay the wheeling.

Senator ANDERSON. What does the city of Seattle pay, for example? Does it pay 1½ mills?

Mr. PEARL. Actually it costs them more than 2 mills because they don't take it this way. This 2 mills in the case we are talking about now is 100 percent load factor. Seattle does not take it at 100 percent load factor.

Senator ANDERSON. If they were, what would they pay?

Mr. PEARL. Two mills.

Senator ANDERSON. So P.G. & E. only gets a 25 percent reduction?

Mr. PEARL. No. They are paying 2 mills, too.

Senator ANDERSON. But you do not get it. You are selling it on a delivered basis.

Mr. PEARL. We are selling it but P.G. & E. pays 2 mills. Copco gets a half mill for doing the wheeling if we agree on that.

Senator ANDERSON. What I am trying to say is that you get a mill and a half for which you sell to P.G. & E. and 2 mills for what you sell to the city of Seattle.

Mr. PEARL. That is right. The power we sell to Seattle is firm power and the power we sell to P.G. & E. is interruptible.

Senator ANDERSON. I am always interested in these private enterprise questions.

Mr. AANDAHL. The power which Seattle gets for which they pay us 2 mills we do not have a net of 2 mills on that because we have transmission cost to get it to Seattle.

Mr. PEARL. That is correct.

Mr. AANDAHL. Just as we would have both transmission and wheeling costs on the power that would go to P.G. & E.

Senator JACKSON. What we are talking about first of all is a postage stamp rate in general. There are variations in this. We allowed the bus bar the 14.50 rate which we wrote into the law which is within 50 miles of the dam. If you would compute the net to Bonneville at various points in the distribution system, some of the public bodies you make less on than you do over a private utility. You could use the argument back the other way. I believe that is correct. We have one rate for the system but the actual cost if you were getting down to cost accounting would vary with each customer, would it not?

Mr. PEARL. We have customers where we lose money.

Senator JACKSON. Yes. That is like the postal system.

Mr. AANDAHL. Yes.

Mr. GOLDHAMMER. We sell power to a co-op in southwest Oregon at the same rate as to a co-op which is just a few miles from the Grand Coulee Dam.

Senator JACKSON. That is right. And then we had a transmission line in the San Juan Islands that I worked on. We want to be forthright on this. I think there are all sorts of possibilities you can work out.

Senator ENGLE. Am I correct, then, in the conclusion that the revenues from this power sold to Pacific Gas & Electric Co. under this contract will be less than to your own customers within your immediate distribution area?

Mr. PEARL. I don't know how I could answer that question.

Senator ENGLE. Just answer the question yes or no.

Mr. PEARL. I can't answer it yes or no.

Senator ENGLE. All I asked you is whether or not the net to Bonneville will be less under this contract than the power distributed within your own distribution area.

Mr. PEARL. If the power distributed within our own area had to go over a line where we paid wheeling, it would be in the same category.

Senator ENGLE. All I am trying to find out is whether or not P.G. & E. clear out of your area, is getting power for less, net to Bonneville, than you get from your own customers. All I want is a yes or no answer.

Mr. PEARL. It is hard to answer.

Senator ENGLE. It may be embarrassing but if it is so why do you not say yes?

Mr. PEARL. We have no secrets. There is nothing embarrassing about it. When we deliver power to any customer it costs us so much to wheel it or put it on our own line. We either pay it by spending Federal money to put in a line or wheeling it over somebody else's line.

If this investment the Federal Government puts in amounts to 2 mills and we sell it for 2 mills, we get nothing out.

Senator JACKSON. May I help at this point by asking this question: Do you have any customer today where the net to Bonneville would be about the same or less as compared with P.G. & E.?

Mr. GOLDHAMMER. Let me answer that question.

Senator JACKSON. Your net out of the P.G. & E. buys is going to be a lot less net than from most of your other customers. I don't think there is any question about that. You agree on that?

Mr. PEARL. If we assume that it doesn't cost us anything to put in a line to get it to our customers.

Mr. GOLDHAMMER. Here is our problem in answering that question. We never look at this except for the incremental cost on any service. We look at it as a system as a whole. Whether the costs are paid out for the system as a whole. In this case there is no incremental cost to the Government at all in selling this power to the P.G. & E. Whereas in the cases of Seattle or some co-op, we are continually adding facilities in order to meet their load growth and their requirements.

You cannot analyze a cost here and a cost here because we are operating an integrated grid system.

Senator JACKSON. You amortize the lines. They have to pay out as a whole.

Mr. GOLDHAMMER. That is right, as a whole. That doesn't mean if we have a system here, if we are going to make an extension to serve a cooperative in southern Oregon, we have to take the nearest point where we have a line, and see whether or not that line will pay out on the incremental costs in 10 years.

The line lasts a lot longer than that and the balance above that will pay out the other cost of the whole transmission grid plus the generation. The only thing we can say on this question you are asking Senator Engle, on an incremental cost basis this deal would yield a very large incremental revenue to the government because our incremental costs nothing.

Senator ENGLE. Do you then say that the net to Bonneville is more than it is to your own customers within your own distribution area?

Mr. GOLDHAMMER. That would vary. The incremental revenue on this particular transaction would be large. If we take the city of Seattle, up to the time we can sell them additional power, that revenue is incremental without any additional cost.

Senator ENGLE. I do not want to go into it any further. I just can't get the answer to the question. Now I am going to turn the case around and ask you this: Do you know the value of this power to the P.G. & E. system? Have you ever studied that?

Mr. PEARL. No. That is a question you probably should ask them.

Senator ENGLE. I am asking you. You are selling a product here. I think that to make an intelligent deal for the Government you ought to know the value of this power to the Pacific Gas & Electric Co. system.

Mr. PEARL. Then to continue on from your question, would you say if we find they are going to make money out of it we shouldn't make the deal? Is that what you are saying?

Senator ENGLE. No, I am not arguing that. I am trying to find out who is doing what to who around here, and I have not been able to find out yet what the net is to Bonneville. I put the shoe on the other foot and I have asked you whether or not in connection with this proposal you evaluated the value of this power to the P.G. & E. system. The reason I ask you this question is this, Dr. Pearl: P.G. & E. has a system that is built on about a 60 percent oil factor. In other words, they produce about 60 percent of their power with oil. If they can run this power down over the line they just pull the oil plants off. I suspect that those oil plants cost them at least 8 mills to operate. What I am trying to find out is just how well the P.G. & E. is getting along with a deal in which they pay 2 or 2½ mills and pull of steam plants that probably cost 8 or 9 or 10 mills to operate.

Have you made any study of that at all?

Mr. PEARL. The type of a study that we have made is this: In a steam plant your power costs you 8 mills. When you shut your power off the cost does not go to zero. You have a fixed cost. You have an incremental cost for fuel. When you take this type of power we are selling them and shut down a steam plant you have saved that incremental cost of fuel. If this power when they get it down to their load center costs them, let us say, 3½ mills—they not only have to take it across the Copco lines but they have to take it on their own lines and get it to their load center.

Senator ENGLE. This is speculative. I asked you a specific question. All I asked you if you analyzed the value of this power to the P.G. & E. system in arriving at the contract. I would like a yes or no answer.

Mr. PEARL. It will be a little more than yes or no. If the power we sell them saves them incrementally 4 mills and they pay us 4 mills they have just broken even. If it saves them 5 mills and ours cost 3 mills, they will net 2 mills.

Mr. GOLDHAMMER. If I may interject, we have analyzed from the basis of the reports of the steam plant costs of the P.G. & E. for 1956.

Senator ENGLE. Have you analyzed the value of this power?

Mr. GOLDHAMMER. What their out-of-pocket fuel costs were for the steam plants they have operated?

Senator ENGLE. Then you answer my question "yes."

Mr. GOLDHAMMER. We have made some analysis.

Senator ENGLE. Without going into a great deal of detail will you submit that analysis to this committe so we can see what conclusion you came out with. I would like to see what you came out with reference to the value of this power to the P.G. & E. system. I don't want to take the afternoon to analyze the figures.

Mr. GOLDHAMMER. In 1956 they had a little over 8 billion kilowatt-hours that they generated with a fuel cost of approximately 4 mills a kilowatt-hour.

Senator ENGLE. Dr. Pearl, just one further question. If you could sell this power to the Central Valley project system on a federally built interconnection, or on a common carrier interconnection of any type, that would yield to the Bonneville system the same amount of money that you are getting out of this proposed contract with the P.G. & E., would you be perfectly willing to do it?

Dr. PEARL. Yes, we would be. That is assuming, of course, that a line was put in so we could get it to them. This is secondary power I am talking about now. This is dump power, secondary power.

Senator ENGLE. I am aware of that. Are you aware of this? In the Central Valley project today we have two contracts with Pacific Gas & Electric Co. We have a wheeling contract and a firming contract. The Central Valley power rate is about 4.5 mills, which, as I look at it, is maybe 2 or 2.5 mills more than P.G. & E. is going to get this power for. What I am saying to you is, is that if that proposition can be managed in such a way that the net revenues to Bonneville are equal to or more than what the P.G. & E. proposes to pay under this contract, would you be willing to do it? Can you answer that question yes or no?

Dr. PEARL. Yes. I think the answer is yes.

Senator ENGLE. Thank you very much.

Senator ANDERSON. In this 4-mill fuel cost you have only fuel. You don't have any of the operation of the plant.

Mr. GOLDHAMMER. That is right.

Senator ANDERSON. If the plant closes down, is it your contention that everybody stays at work in the plant?

Mr. GOLDHAMMER. No. We had no figures on that.

Senator ANDERSON. Is it your understanding that they pay workmen's compensation and all the other things on people who are not there?

Mr. GOLDHAMMER. This is just the fuel cost on the plant. That is all the data we had available to us.

Senator ANDERSON. I don't question that.

Senator JACKSON. I have one other question, Mr. Chairman.

Senator ANDERSON. Very well.

Senator JACKSON. Dr. Pearl, as you know, we had an experience last year with the aluminum companies in the Northwest. A recession comes on and they cut off their interruptible power. I understand they have been trying to get some firm power contracts, but so far they have been unsuccessful. Is there any chance now of that situ-

ation changing so they can get firm power? This affects their operation in the Northwest, and I think it ties into this situation here.

Dr. PEARL. Do you mean a block of firm power?

Senator JACKSON. Yes.

Dr. PEARL. Our table that we submitted for the record on power outlook, table 2, would give you a quick answer to that. There is no block of power for them in the foreseeable future as far as our studies have gone.

Senator JACKSON. You don't see any hope of their getting a block of firm power.

Dr. PEARL. Yes.

Senator JACKSON. At this time or for some time in the future?

Dr. PEARL. As far as we know now.

Senator JACKSON. In these calculations you have made looking ahead, have you taken into consideration the firming up of the interruptible power by upriver storage and other developments including what we might build and what the Canadians might build?

Dr. PEARL. That is the reason we have held this down to a 10-year contract. We have stipulated that if the power is needed in our area, it will not be available out of the area.

Senator JACKSON. I was wondering whether this billion kilowatt-hours will be available if we make some rather rapid progress? I think it points up the reason, it seems to me, why we should really dig into this in the light of what may be developing here in connection with our Canadian friends.

Dr. PEARL. You notice we put down two dates up there. It is our opinion that this 1 billion will be a small amount of the power that will be available for the next 10 years. In other words, the one thing that I was trying to show you this morning is that the amount we have is so large that this block we are talking about for P.G. & E. is relatively small.

Mr. GOLDHAMMER. May I point out something on the map here? Supposing we had storage equivalent to about a million kilowatts up in Canada which would hold back water in the summer. You can see here we have to serve that load in the summertime. So we add a million kilowatts to what we expect to serve in the area—or, for example, taking the month of July, we serve 600,000 average kilowatts on the area, and we have Canadian storage that brings in another million kilowatts. Then we would still have close to 2 million kilowatts of secondary power available during the month of July.

Senator JACKSON. Even with the storage?

Mr. GOLDHAMMER. Even with the storage. In May and June we see a comparable situation with relatively large amounts of secondary available. In the close months like August, the secondary would disappear completely.

Senator JACKSON. I think in event we should dig into this quite a bit, as well as to look into the question, Dr. Pearl, on transmission lines. I have understood in the past that it would be cheaper per kilowatt-hour to put in a heavier line. I have listened to that engineering argument back in 1950. That is all the more reason, Mr. Chairman, why we ought to take a good hard look at the engineering possibilities. I am not disputing your views on this necessarily at all,

because I respect your engineering ability, but I am concerned about that aspect of it.

Dr. PEARL. We have made some studies on that. A heavier line cannot originate at Yamsay and stop at pit 3. It has to come to the heart of our system.

Senator JACKSON. There is no question about that. You can't take a 230 line and hook it onto a 445.

Dr. PEARL. No.

Mr. AANDAHL. Mr. Chairman, may I make an observation here?

Senator ANDERSON. Surely.

Mr. AANDAHL. In view of the possibility of this secondary power being absorbed in firm power 10 years hence, or at such time as there is upstream storage, it might just be awfully good business to get a short-term contract into effect quickly so that we could enjoy the benefit of the sale of some of this secondary power that is going to waste.

Senator ANDERSON. I will put in the record a letter addressed to me on March 20 by Senator Magnuson and Senator Jackson, saying that one of the background phases of this problem is the lack of market for the Bonneville system power. Construction on the intertie has centered on seasonal or dump power to California when it is not required in the Pacific Northwest. The absence of a market for this type of power has adversely affected the Bonneville picture. It has come to our attention that there is another phase of the problem that you request you inquire at the April 8–9 hearings with respect to its effect on Bonneville's financial status. This relates to contracts the Secretary of Interior, Douglas McKay, entered into with private utilities on October 20, 1953, whereby approximately 500,000 kilowatts of firm power is frozen for these operators whether or not they take the volume which is allotted to them.

Is that still in existence?

Dr. PEARL. Those 20-year contracts are still in existence. We found last summer that we would have sufficient power to take care of the requirements of the private utilities, and we put them on a computed demand for the next 3 years. In the meantime we are now able to meet their requirements for the next 3 years. We are able to make available this half million kilowatts in accordance with our contracts, and they are taking the half million kilowatts.

Senator ANDERSON. It is no longer frozen?

Dr. PEARL. They are taking it. In other words, the letter would sound as if it was available and they were not taking.

Senator ANDERSON. Yes.

Dr. PEARL. They are taking the half million kilowatts as of today.

Senator ANDERSON. I sent out a letter to Mr. Campbell, and representatives of the Comptroller General will testify asking if there was a problem affecting the situation. I will put the two letters into the record at this point, together with the fuel cost of principal Pacific Gas & Electric steamplants.

(The correspondence referred to follows:)

UNITED STATES SENATE,
COMMITTEE ON INTERIOR AND INSULAR AFFAIRS,
March 23, 1959.

Hon. JOSEPH CAMPBELL,
Comptroller General of the United States, General Accounting Office, Washington, D.C.

DEAR MR. CAMPBELL: Please refer to my letter of March 2, 1959, advising you of the hearings on a proposed Bonneville (Pacific Northwest)-California power transmission intertie.

Attached is a copy of a letter, dated March 20 from Senators Magnuson and Jackson of the State of Washington, with respect to a phase of the problem involving the financial situation of the Bonneville Power Administration and the lack of a market for the Bonneville system power.

The subcommittee will appreciate your attention to this phase of the problem, in addition to the analyses requested in my previous letter. This subject has been discussed with Mr. Milgate, to whom a copy of this letter is being sent.

We would like to have the views of the Comptroller General on this particular phase of the problem involved in the hearing on the intertie proposition.

Sincerely,

CLINTON P. ANDERSON,
Chairman, Subcommittee on Irrigation and Reclamation.

STATE OF CALIFORNIA,
DEPARTMENT OF WATER RESOURCES,
Sacramento, January 16, 1959.

Mr. B. P. BELLPORT,,
Regional Director, Region II,
U.S. Bureau of Reclamation,
Sacramento, Calif.

DEAR MR. BELLPORT: In the studies being made for supply of the large amounts of pumping power that will be required for the State's delta diversion projects, the Federal Central Valley project has been considered as a possible source. Investigation as to the present or future availability of such power appears to be appropriate at this time in view of the possibility of congressional authorization of the proposed Auburn development which would make additional power available in the future.

Application is hereby made for Federal Central Valley project power in whatever amounts can be made available to the State of California for delta diversion projects pumping. We suggest that negotiations be initiated as soon as possible to determine the cost and availability of energy for that purpose.

Very truly yours,

HARVEY O. BANKS, *Director.*

Fuel cost of principal Pacific Gas & Electric steam plants, 1956

Name of plant	Location	Installed capacity (kilowatts)	Net generation (million kilowatt-hours)	Fuel cost (mills per kilowatt-hour)
Kern	Bakersfield	152,000	1,075	3.82
Hunters Point	San Francisco	235,100	480	4.12
Contra Costa	Antioch	535,500	1,225	3.45
Moss Landing	Salinas	528,550	820	4.30
Pittsburg	Pittsburg	625,000	2,250	2.84
Morre Bay	Morre Bay	338,236	1,380	3.02
All other		423,980	1,030	8.35
Total, all plants		2,838,386	8,260	3.98

Source: Federal Power Commission survey.

Senator ANDERSON. Thank you, Dr. Pearl.

(The following letter was subsequently submitted:)

U.S. DEPARTMENT OF THE INTERIOR,
BONNEVILLE POWER ADMINISTRATION,
Portland, Oreg., April 9, 1959.

Hon. CLINTON P. ANDERSON,
Chairman, Subcommittee on Irrigation and Reclamation,
U.S. Senate, Washington, D.C.

DEAR SENATOR ANDERSON: In order to further clarify the record in connection with the recent hearings on the proposal of the Bonneville Power Administration to sell surplus secondary energy to the Pacific Gas & Electric Co., please be advised that the general public was notified of the negotiations being carried on by a press release issued January 13, 1959, which was the date of the first contact between representatives of the Government and the company.

If we can furnish further data which will assist the committee in reaching a decision in this matter, please advise us.

Sincerely yours,

J. LANE MORTHLAND,
Assistant Administrator.

Senator ANDERSON. The next testimony will be from Mr. D. S. Campbell, and Mr. Fleming will be with him.

STATEMENT OF D. S. CAMPBELL, CHIEF, DIVISION OF POWER, BUREAU OF RECLAMATION, DEPARTMENT OF THE INTERIOR

Mr. CAMPBELL. Mr. Chairman, I will address myself to the Central Valley system as it now exists.

Senator ANDERSON. Will you state first what your position is with the Government?

Mr. CAMPBELL. I am Chief of the Division of Power of the Bureau of Reclamation.

The power available for sale to customers on a firm basis at required load factor comprises 450,000 kilowatts. This total is greater than the amount of firm power attainable from project powerplants using only water which is available in a basic adverse water year. The larger attainable amount results from contractual integration arrangements with Pacific Gas & Electric Co. whereby hydroelectric power is used for peaking service, and necessary energy to supply customers' load-factor requirements is supplied to the Bureau by the company. The arrangements provide basically that the dependable power capacity of project plants, after supplying project pumping requirements, is that capacity which can be supported by certain minimum quantities of energy in each month of adverse water year. By contract provision with the company, the minimum amount of hydroelectric energy which must be available for each dependable kilowatt of capacity varies from a low of 80 kilowatt-hours in December to a high of 400 kilowatt-hours in August.

Data supplied by the Bonneville Power Administration on exportable secondary energy from the Columbia River system show the monthly availability over a 20-year period from 1928 to 1948 on the basis of the 1962–63 level of development in the Northwest, that for some years there is no exportable surplus during the 6 winter months of October through March. In only 3 out of 20 years is there exportable secondary energy in all months of the year. Data on the 1968–69 level of development likewise show no energy for extended periods in the winter months.

Senator ANDERSON. May I ask you why the 20 years from 1928 to 1948 are used? Why not the 20 years from 1938 to 1958?

Mr. CAMPBELL. I presume those were the readily available water flow figures and production figures that Bonneville had. I don't know why they used that particular period, sir.

Senator ANDERSON. Don't you have them up to date? You don't take them every 10 years?

Mr. GOLDHAMMER. We made very detailed analyses and this goes back for a number of years. We picked out a number of years ago, 20 years, with a series of wet and dry years in which we have been making detailed power analyses. We have made some analysis but not in the detail of the 37 years, of 1920 through 1957. But the data on which we have very complete operation studies, such as how we would operate day by day and so forth, are on the 20-year basis.

Senator ANDERSON. What I am trying to get to is that I saw some studies of the Colorado River one year. California used one 20-year period, and the upper basin States used another 20-year period. Each by some miracle picked out the 20 years that was most favorable to that particular State. You did not happen to pick these 20 years out?

Mr. GOLDHAMMER. No. We picked them out because we started making these studies years ago. We have been using the same basic data ever since. We made some comparisons.

Senator ANDERSON. We have a life insurance bill in the Finance Committee that we are going to pass out and they are using the mortality tables of 1890. You can do better than that if you want to.

Mr. GOLDHAMMER. The point is that if we made the detailed operational studies as to how you operate this system day by day, these are all set up and worked out on digital computers, and it takes a lot of work and time to analyze this. We have compared this with other periods. For example, when we are talking about the secondary energy availability, if we take the 37 years 1920 through 1958, we get approximately 12 percent more power, because we have had this series of wet years, than if we take the 20 years. We have not felt it was worth the time and money to go back and make the detailed day-by-day operation studies that we did for these 20 years.

Senator ANDERSON. Do I understand from that that we might mark that up by 10 percent if we wanted to, or 12 percent?

Mr. GOLDHAMMER. That is right. Assuming that the 37 years are representative of the future years.

Senator ANDERSON. I know of no one who can assume what the future is going to be.

Mr. GOLDHAMMER. That is right.

Senator ANDERSON. You may proceed.

Mr. CAMPBELL. Exportable secondary energy from the Northwest area is not available to the Central Valley project at such times as to permit its utilization in a manner so that it could be used as a source of supply for serving firm power loads of preference customers. The pattern of availability of secondary energy from the Bonneville Power Administration also would not tend to increase the peaking capacity of the Central Valley project power plants under the present contractual provisions with the company which determine the maximum amount of project dependable capacity.

Senator ANDERSON. I don't understand exactly all the language. Let me put it this way. Is it your testimony that this power brought down to the Central Valley project would be of no value to it?

Mr. CAMPBELL. It would be of no value to us in serving firm power customers because of its very intermittent nature year by year, and month by month.

Senator ANDERSON. Will it be of any value to serving firm power customers of P.G. & E.? They are not buying it for that purpose, are they?

Mr. CAMPBELL. I presume they are buying it, Senator, to operate in with their steam system which we do not have. We have a straight hydro system, sir.

Senator ANDERSON. It does not come in at a period when your power is low and therefore supplement it?

Mr. CAMPBELL. No, sir.

Senator ANDERSON. Are there any questions?

Senator ENGLE. Yes, I would like to ask some questions. The Bureau of Reclamation does have a firming contract with Pacific Gas & Electric Co., does it not?

Mr. CAMPBELL. That is right, sir.

Senator ENGLE. The average rate for just rule of thumb is about 4.5 mills in the Central Valley project?

Mr. CAMPBELL. Somewhere around there.

Senator ENGLE. Bonneville is going to sit up there and import power to the P.G. & E. at 2 or 2.5 mills, isn't that right?

Mr. CAMPBELL. From what I heard, yes.

Senator ENGLE. Why can't the CVP take this Bonneville power and utilize it to help firm the Trinity?

Mr. CAMPBELL. I am reporting here only on the existing CVP system as it exists. Studies have not been made as to the effect of this importation on the Trinity system.

Senator ENGLE. The Trinity is currently under construction, isn't it?

Mr. CAMPBELL. Yes, sir, the dams.

Senator ENGLE. Of course it is. It is going to be in production in 2 or 3 years. I notice you give the firm power capacity in the Trinity at 450,000 kilowatts. As a matter of fact, when we get the Trinity on, we will have almost a million kilowatts of installed power in the Central Valley project.

Mr. CAMPBELL. May I correct your statement? I did not say that the Trinity installed is 450,000. The Central Valley presently installed supportable capacity is 450,000.

Senator ENGLE. That is what I intended to say.

Mr. CAMPBELL. I am sorry, I misinterpreted you.

Senator ENGLE. If I did not, we will correct the record accordingly. What is the installed capacity now in the CVP?

Mr. CAMPBELL. It is something in excess of 600,000 kilowatts.

Senator ENGLE. That is right. We are going to add to the Trinity and we will be pretty close to a million.

Mr. CAMPBELL. That is right.

Senator ENGLE. And the Secretary of the Interior testified that at that time they intended to firm up about 630,000 kilowatts; is that right?

Mr. CAMPBELL. Somewhere in that neighborhood; 630 or 650.

Senator ENGLE. What would be the effect of taking Bonneville power into the Central Valley system with reference to the capability of the Central Valley system to firm a higher percentage of its hydro output?

Mr. CAMPBELL. That I cannot answer because a study has not been made with respect to the expanded system, including the Trinity.

Senator ENGLE. Don't you think that is a pertinent piece of information to have with reference to whether or not the CVP would be interested in this intertie?

Mr. CAMPBELL. It might well be, yes, sir.

Senator ENGLE. Have you by any chance read the report that was made in 1951 by the Federal Power Commission and the Department of Defense with reference to the intelligence of an intertie between the Central Valley project system and the Bonneville system?

Mr. CAMPBELL. Yes, sir.

Senator ENGLE. Do you have any reason to give now why the intelligence of their recommendations should have changed since that time?

Mr. CAMPBELL. No, sir, except it is my understanding that that report was based on the importation of this power from the Northwest for the purposes of saving fuels in the California area, rather than increasing capabilities of hydro systems.

Senator ENGLE. It is still important to save fuel, isn't it?

Mr. CAMPBELL. That is right, sir.

Senator ENGLE. Let us assume that the Central Valley project could get a large block of the Bonneville power during certain months of the year. Could that power be intelligently and practically used in connection with the present firming and wheeling contracts which CVP has with the Pacific Gas & Electric Co.?

Mr. CAMPBELL. You are speaking now of the present contracts?

Senator ENGLE. Yes, sir.

Mr. CAMPBELL. No, sir. It would not add anything especially looking toward firm power. It will not add to the peaking capability.

Senator ANDERSON. I am sorry, but we have a rollcall starting.

(Recess.)

Senator ANDERSON. The committee will be in order. Have you finished your statement?

Mr. CAMPBELL. Yes, sir.

Senator ENGLE. I had one more question, Mr. Chairman.

Have you made any study or has any study been made in the Central Valley project, regarding the possible use of power from the Bonneville system?

Mr. CAMPBELL. In the existing Central Valley system as it exists today, sir?

Senator ENGLE. Yes.

Mr. CAMPBELL. Yes. That was the basis of my judgment.

Senator ENGLE. Do you have that study available?

Mr. CAMPBELL. It is not a water study as such. I read the statement which gave the results of the analysis based on the power available month by month and year by year in the BPA system as it would affect the existing Central Valley as of today.

Senator ENGLE. Do I understand that study was not reduced to writing?

Mr. CAMPBELL. Except as it is reported in this statement, yes, sir.

Senator ENGLE. Can you make available to us the raw material, the basic data upon which the conclusion was arrived at?

Mr. CAMPBELL. Yes, sir.

Senator ENGLE. Would you do that for the purpose of the record?

Mr. CAMPBELL. Yes, sir, I would be very glad to.

(The following information was subsequently submitted:)

The numerous monthly voids in tables 1 and 2 attached, indicating BPA estimates of availability of secondary energy, illustrate my statement that exportable energy from the Northwest is not available at such times as to permit its use as a source of supply for firm powerloads of the Central Valley project. The present firm supply is largely dependent on support of the project's varying hydrogeneration by Pacific Gas & Electric Co. Application of the same support arrangements to the Northwest energy would require evidence that energy would be available throughout adverse water supply periods, particularly for a recurrence of the 1930–33 conditions. As I explained in my direct statement, the company requires as little as 80 kilowatt-hours in December to qualify a kilowatt for support. Even this amount, however, which is far less than required by an average customer, is not available from the Northwest. The following extracts from article 10 of the contract with Pacific Gas & Electric Co. details this condition:

"(*c*) For each kilowatt of project dependable capacity the United States shall make available for release through project plants amounts of water which, under the methods and criteria specified and applied in reclamation study, would produce energy, in addition to project load, in amounts not less than the following:

"(1) For that portion of project dependable capacity required from each project plant each month, as determined by the contracting officer, the amount specified in table 1–A below for that month: *Provided*, That, unless otherwise agreed upon, the amount specified in such table for any month shall be prorated so that an approximately equal number of kilowatt-hours shall be available each week in such month.

"(2) For capacity available January through June of each year, a total of 820 kilowatt-hours per kilowatt during such period; for capacity available for only part of such period, the sum of the monthly amounts shown in column 1 of table 1–B below.

"(3) For capacity available July through December of each year, a total of 1,960 kilowatt-hours per kilowatt during such period; for capacity available for only part of such period, the sum of the monthly amounts shown in column 2 of table 1–B below.

"The amount in any month credited to maintain the totals set forth above in paragraphs (2) and (3) shall not exceed the amount shown for that month in table 2 in subdivision (*f*) of this article, except as otherwise agreed upon."

TABLE 1–A.—*Kilowatt-hours per kilowatt*

Month	Shasta	Folsom	Keswick	Nimbus
January	96	96	138	138
February	112	112	160	160
March	112	112	160	160
April	112	112	160	160
May	112	112	160	160
June	160	160	240	240
July	320	320	360	360
August	360	360	400	400
September	280	280	320	320
October	144	144	200	200
November	112	112	120	120
December	80	80	96	96

TABLE 1–B.—*Kilowatt-hours per kilowatt*

Column 1		Column 2	
January	160	July	470
February	140	August	550
March	140	September	460
April	140	October	290
May	140	November	170
June	200	December	120

TABLE 2A.—*Availability of secondary energy, Federal Columbia River power system, 1962–63 level of development*

[Thousands of average kilowatts]

Year	July	August	Sept. 1–15	Sept. 16–30	October	November	December	January	February	March	April	May	June
1928–29	3,343	2,543	1,549	231	70	0	0	294	130	116	860	1,959	2,942
1929–30	3,154	1,862	741	0	0	0	0	0	0	0	838	1,978	2,926
1930–31	3,049	2,182	1,507	499	0	0	0	0	0	0	558	2,105	2,777
1931–32	2,838	1,604	1,693	749	0	0	0	----	----	779	2,843	3,088	3,156
1932–33	3,364	2,395	2,086	499	0	0	1,690	1,219	1,456	178	2,090	3,019	2,998
1933–34	3,227	2,900	2,404	1,219	1,500	2,319	2,873	3,094	2,640	2,694	2,886	3,059	3,027
1934–35	3,154	2,154	1,432	213	0	878	1,702	418	1,550	1,728	1,868	2,777	3,089
1935–36	3,217	2,617	1,731	635	0	0	0	0	0	56	1,903	2,913	3,213
1936–37	3,129	1,963	1,280	137	0	0	0	0	0	0	351	2,339	3,088
1937–38	3,221	2,036	911	440	0	0	0	629	1,718	1,801	2,418	3,009	2,898
1938–39	3,347	1,763	959	616	109	0	114	0	1,023	331	2,349	2,907	3,091
1939–40	3,286	2,249	1,499	283	0	0	342	1,065	480	2,172	2,268	2,912	3,041
1940–41	2,989	1,737	1,251	923	415	789	360	261	1,139	1,612	1,668	2,433	2,889
1941–42	2,918	1,543	1,528	1,611	1,635	1,806	2,390	1,792	1,331	758	1,950	2,588	3,055
1942–43	3,364	2,536	1,233	252	0	0	374	793	1,439	1,461	2,910	3,058	3,229
1943–44	3,437	2,839	1,311	64	0	0	0	47	518	210	560	1,742	2,413
1944–45	2,754	1,511	824	378	0	0	0	0	131	894	1,210	2,754	3,011
1945–46	3,379	1,549	832	181	0	0	0	597	2,005	1,961	2,425	2,894	3,070
1946–47	3,336	2,408	1,932	519	346	540	1,091	2,272	1,931	2,201	2,470	2,782	3,013
1947–48	3,370	2,343	1,296	608	2,449	1,302	2,412	1,493	1,128	1,738	2,018	2,809	2,422

NOTE.—Estimated 600,000 average kilowatts of above amounts would be required for Bonneville Power Administration interruptible industrial loads and steam displacement at existing steamplants.

TABLE 2–B.—*Availability of secondary energy Federal Columbia River power system, 1968–69 level of development*

[Thousands of average kilowatts]

Year	July	August	Sept. 1–15	Sept. 16–30	October	November	December	January	February	March	April	May	June
1928–29	3,702	2,666	1,027	29	157	246	126	433	145	41	0	2,195	3,745
1929–30	3,725	1,708	441	2	0	0	0	0	308	259	1,398	2,433	3,554
1930–31	3,683	2,184	538	218	0	0	0	168	190	56	728	2,019	3,350
1931–32	3,166	1,408	716	0	0	0	0	0	0	2,138	2,996	3,225	3,680
1932–33	3,905	2,482	1,290	646	513	1,319	1,226	997	1,220	1,449	1,260	3,273	3,379
1933–34	3,764	3,316	2,338	1,976	1,950	3,068	2,555	3,410	2,771	3,784	3,729	3,923	3,547
1934–35	3,606	2,094	751	399	339	1,571	1,601	1,330	1,451	1,583	1,805	3,149	3,698
1935–36	3,753	2,848	1,136	398	0	0	0	515	233	60	1,349	3,171	3,810
1936–37	3,507	1,709	598	0	0	0	0	0	0	0	136	2,675	3,826
1937–38	3,758	1,744	454	189	0	797	957	1,197	1,086	1,986	3,043	3,185	3,480
1938–39	3,885	1,566	498	671	666	408	357	436	547	972	2,534	3,101	3,788
1939–40	3,817	2,264	656	301	535	784	725	944	922	2,225	2,510	3,166	3,637
1940–41	3,415	1,540	661	1,099	986	849	821	985	763	1,103	1,727	2,217	3,590
1941–42	3,249	1,331	1,200	2,011	1,983	2,006	2,251	1,692	1,672	2,072	2,569	3,137	3,581
1942–43	3,902	2,711	761	630	611	1,188	1,220	1,243	1,063	1,168	3,553	3,271	3,574
1943–44	3,957	3,165	956	25	143	216	136	227	199	39	0	1,977	2,486
1944–45	2,903	1,285	315	190	183	328	174	589	615	1,548	1,268	3,375	3,642
1945–46	3,951	1,307	351	128	172	1,166	1,245	1,156	1,223	1,726	2,930	3,080	3,544
1946–47	3,573	2,518	1,508	907	886	1,495	2,563	2,183	2,091	2,232	2,525	3,007	3,470
1947–48	3,021	2,368	819	1,272	1,660	2,203	2,009	1,901	1,827	2,102	2,761	3,033	2,851

NOTE.—Estimated 600,000 average kilowatts of above amounts would be required for BPA interruptible industrial loads and steam displacement at existing steamplants.

Senator ENGLE. You say you have made no study whatsoever regarding the impact of the use of Bonneville power on the firm power potential, or the operation of the Central Valley project from a power standpoint with the Trinity completed?

Mr. CAMPBELL. That is correct.

Senator ENGLE. Why haven't you done that?

Mr. CAMPBELL. It is quite a time-consuming chore, and there was no time to do it.

Senator ENGLE. Aren't the possibilities very strong that Bonneville power could firm up a very heavy percentage of the Central Valley project power with Trinity added?

Mr. CAMPBELL. I would not want to hazard a guess as to that without making the study, sir.

Senator ENGLE. But you passed upon whether or not you were interested in this Bonneville interconnection without any study on the Trinity, is that correct?

Mr. CAMPBELL. That is correct. With only the existing system as it is presently operated.

Senator ENGLE. When will the Trinity go on the line?

Mr. CAMPBELL. Presumably in 1966, or somewhere in there.

Senator ENGLE. You mean it is going to be 7 more years?

Senator ANDERSON. Seven long years.

Mr. CAMPBELL. Let us say 1965–66, or somewhere in there.

Senator ENGLE. I have just one further question. If the Bonneville power is good for the Pacific Gas & Electric Co., why isn't it good for the Central Valley project in light of the wheeling and firming contracts which CVP has with P.G. & E.?

Mr. CAMPBELL. It does not add to the firm power capability of the existing CVP under the existing contract arrangements with P.G. & E. It does not add to the peaking of the existing CVP under the same conditions.

Senator ENGLE. You say you have basic charts upon which you base that conclusion.

Mr. CAMPBELL. Yes, sir.

Senator ENGLE. Will you submit them for the record?

Mr. CAMPBELL. Yes, sir.

(The charts referred to are those identified as tables 1 and 2 on pp. 103–105.)

Senator ENGLE. Thank you very much, Mr. Chairman.

Senator ANDERSON. Thank you. Dr. Pearl, I want to read you a memorandum. It is from the chairman of the full committee and addressed to me, saying:

> As I will not be able to attend the hearings on the Bonneville-California intertie, I will appreciate it if you will have the attached questions asked of Dr. Pearl, Bonneville Administrator. His replies can be applied for the record if time does not permit him to make adequate answers at the open hearing.

Many of the things Chairman Murray has asked about we have indirectly covered in this hearing. He asked several questions whether you are required to hold power for the private utilities for years in advance. In view of the fact that we are going to be away behind on this hearing, and we have problems tomorrow arising out of an athletic event, I wonder if it would not be as well if I hand you these questions and ask you to submit answers for the record.

Dr. PEARL. Yes, sir.

(The matter referred to is as follows:)

QUESTIONS SUBMITTED BY SENATOR MURRAY

1. How much unsold firm power do you have now above all contract requirements and reserves?

2. Are the private utilities taking less power than you previously anticipated or than they had requested? (*a*) How much less? (*b*) Why? Are they by chance buying power from Idaho Power Co. and other private utilities? If so, how much and at what rates?

3. Are you holding power earmarked for sales to the utilities on an if-and-when basis in the indefinite future?

4. Do you really believe that you are required to hold power for the private utilities for years in advance?

5. Is this requirement a matter of statute or of Administration policy to favor the utilities?

6. For how many years do you consider it reasonable to hold this power in abeyance?

7. Assuming an opportunity exists to sell this power to private industry, doesn't the holdback result in a substantial loss of revenue to the Government and a loss of new employment in the area?

8. Why can't you sell this power for 20 years to industry under the Bonneville Act?

9. Do you really feel that the Government will have no additional power in the future?

10. What about the potential in the authorized projects such as the Lower Snake Plants, and Libby, the Army's 308 report and the new reactor at Hanford?

11. Do your lawyers feel that you should hold this power or that the private utility contract prevents your selling it?

12. Do you feel as Bonneville Power Administration Administrator that you should hold this power?

ANSWERS TO QUESTIONS SUBMITTED BY SENATOR MURRAY

1. Bonneville Power Administration has an estimated 250,000 kilowatts of unsold firm power for 1959–60 after allowing for reserves. This amount declines each year reaching zero in 1962–63.

2. The private utilities are taking less power this year than previously estimated. This is true of all other classes of our customers.

2*a*. In 1956 our estimate of the power the private utilities would be taking in 1958–59 was 319,000 kilowatts more than it now appears they will actually take.

2*b*. This results from the following:

	Average kilowatts
Decrease in estimated load	139,000
Purchase from Montana Power Co	91,000
Purchase from Idaho Power Co	78,000
Other sources	11,000
Total	319,000

2*c*. Idaho Power Co. sells an average of 25,550,000 kilowatt-hours per month from September 15 to April 15, and 53,000 kilowatt-hours of peaking to Pacific Power & Light for $105,735 each month. Washington Water Power pays the same rate for delivery from Idaho. Washington Water Power also purchased power from Montana Power Co. for the period September 1, 1958 to August 31, 1959. Washington Water Power will pay $1 million for 320 million kilowatt-hours of energy and 100,000 kilowatts of peaking. Washington Water Power also has an option to purchase an additional 285 million kilowatt-hours at a rate of 1.8 mills per kilowatt-hour for hydro and 3 mills per kilowatt-hour for steam.

3. BPA is not holding power earmarked for sales to the private utilities on and "if and when" basis in the indefinite future.

4. We do not believe that BPA is required to hold power for the private utilities for years. The amount of power available for the utilities will decline each year until the power from the John Day project becomes available in 1967.

5. While the private utilities do have a priority over industry until such time as we are serving them 1½ million kilowatts, there is no statute or Administration policy that requires us to hold this power if they are not able to use it as it becomes available.

6. We do not consider it reasonable to hold power in abeyance.

7. Last year, and again this year, firm power was offered to industry for the period of its availability.

8. Surplus firm power available after meeting the requirements of the preference customers and not purchased and used by the private utilities in accordance with their 20-year contracts can be sold to industry for a period of 20 years in accordance with the Bonneville Act.

9. We feel that in all probability the Government will have additional amounts of firm power in the Pacific Northwest in the future.

70. The authorized projects mentioned in your question will offer potential additional Federal power for the Pacific Northwest.

11. Assuming that the power referred to in this question is the same as that referred to in your questions Nos. 9 and 10 it is the feeling of our lawyers that under their contracts the private utilities have a priority to 1,500,000 kilowatts after the preference customers' requirements and present industrial commitments have been met. If the utilities do not agree to purchase this power when it becomes available, such power may be sold to other customers for periods not to exceed 20 years.

12. I feel that after recognizing the priority of the utilities as stated in the above answer, the power should be sold to the best advantage of the Government.

Senator ANDERSON. Mr. Kane, Mr. Milgate, and Mr. Muhonen. We have two letters from the Comptroller General of the United States, dated April 3 and 9, 1959. We have a pamphlet entitled "Summary Analysis of the Columbia River Power System, April 1959," and we have a short form report on audit of the Columbia power system, and related activities fiscal year 1958. I think I will decide that the letters will be put in the record in full at this point. Following the two letters will appear the summary analysis.

(The letters and the document are as follows:)

COMPTROLLER GENERAL OF THE UNITED STATES,
Washington, April 3, 1959.

B-114858

Hon. CLINTON P. ANDERSON,
Chairman, Subcommittee on Irrigation and Reclamation, Committee on Interior and Insular Affairs, U.S. Senate.

DEAR MR. CHAIRMAN: Your letter dated March 2, 1959, requests a summary of certain factual and financial analyses of the operations of the Bonneville Power Administration. In accordance with your letter, attached are copies of a memorandum covering the information we have on Bonneville Power Administration and generating projects of the Columbia River Power System. We are also enclosing copies of our short form report on the audit of the financial statements of the Columbia River power system and related activities for fiscal year 1958.

Net commercial power revenues of the Columbia River power system have been declining in recent years and in fiscal year 1958 a loss of about $2,950,000 was sustained. System projects placed in service during recent years have been built at higher construction cost levels than the Bonneville Dam project and Grand Coulee Dam (Columbia Basin project) which were the first projects in the system. Because the BPA commercial power rate level has not increased since 1938, depreciation and interest expense on higher cost projects have increased proportionately more than the gross revenues derived from the added generating capacity. The increase in these fixed charges, together with a general rate level that has remained constant for some 20 years, has acted to reduce the net revenues from commercial power operations. Moreover, in fiscal year 1958 this condition was compounded due to the economic recession and mild winter weather conditions.

Net revenues are not necessarily the criteria to be applied in determining the adequacy of rate levels of the Columbia River power system and should not be used without qualification. Power rates of the Columbia River power system

are established at a level which will, over a number of years consistent with the requirements of law, provide repayment of the investment in commercial power, together with interest on the unrepaid Federal investment in power, and the investment in related irrigation activities assigned for repayment from commercial power revenues. Even though net revenues have been declining in recent years, funds returned to the Treasury by BPA for projects of the Columbia River power system at June 30, 1958, were $76,345,213 in excess of funds required to meet the scheduled repayments at that date. We understand present projections indicate that if current power rate levels are not increased, about $40 million of the $76,345,213 cumulative excess of funds returned over repayment requirements will be needed to meet the estimated deficiency in annual revenue receipts compared with annual repayment requirements during the 5-year rate revision period ending in December 1964. The deficiency would result despite the downward revision of the allocation to power of the construction costs of joint-use facilities on three projects and increased revenues anticipated for wheeling non-Federal power.

We are continuing our work regarding the lack of a market for certain Columbia River power system power and energy as requested in your supplemental letter dated March 23, 1959. Comments on this phase of our work will be furnished to you before the hearings, scheduled on April 8 and 9.

Sincerely yours,

JOSEPH CAMPBELL,
Comptroller General of the United States.

COMPTROLLER GENERAL OF THE UNITED STATES,
Washington, D.C., April 9, 1959.

B-114858

Hon. CLINTON P. ANDERSON,
Chairman, Subcommittee on Irrigation and Reclamation, Committee on Interior and Insular Affairs, U.S. Senate.

DEAR MR. CHAIRMAN: Further reference is made to your letter dated March 23, 1959, and the enclosed March 20, 1959, letter from Senators Magnuson and Jackson regarding the lack of a market for certain Columbia River power system power and energy and provisions of contracts entered into by the Department of the Interior with private utilities in October 1953.

Our comments which follow are based principally on discussions with personnel of the Bonneville Power Administration at Portland, Oreg., and at Washington, D.C., and review of certain power sale contracts.

SALE OF SURPLUS DUMP POWER

Based on current projections by the Administration, BPA presently has sufficient power resources to meet all of its power marketing requirements in the Pacific Northwest for the next 5 years. The proposed intertie between Oregon and California would provide a means for disposing of surplus energy.

It is our understanding that under the proposed arrangement with Pacific Gas & Electric Co., mutual assistance could be provided in case of emergencies occasioned by critical water years; also, because of the diversity of loads and resources between California and the Pacific Northwest substantial advantages could accrue to each area. An official of the Pacific Gas & Electric Co. testified on January 22, 1958, before the House Committee on Interior and Insular Affairs, Subcommittee on Irrigation and Reclamation, that the P. G. & E. system usually peaks in August but a December peak has occurred a number of times in the past. BPA officials informed us that the Northwest power pool has its peak load normally in January; also that the runoff of the P. G. & E. hydro system occurs in the spring of the year while the heavy runoff of the Columbia River power system occurs during the summer months.

We have not undertaken a review of the feasibility of construction of the intertie. We understand that consideration was given to an intertie between Oregon and California around 1950. At that time the proposed interconnection was carefully analyzed by the Federal Power Commission with cooperation from the Bonneville Power Administration, the Bureau of Reclamation, California Oregon Power Co., and Pacific Gas & Electric Co. The study, pub-

lished in 1953, found that two 230-kilovolt lines would be economically feasible, whether built by the Government or by private utilities.

Under one proposal P. G. & E. would construct 70 miles of transmission line from its existing facilities to the Oregon border and California Oregon Power Co. would construct 20 miles of transmission line from Klamath Falls to the California-Oregon border where the two lines would interconneet. BPA would absorb the line losses and wheeling charges (1-mill per kilowatt-hour) to the California border which would be considered the point of delivery to P. G. & E. At that point BPA would receive about 2½ mills for the energy. On this basis together with a condition of wheeling by Copco that the company reserve priority as to disposition of its own surplus power, the net revenues would amount to about $900,000 a year.

If the wheeling charge were reduced to, say, two-thirds of a mill the net revenues would amount to approximately $1 million a year. The additional revenues derived from the intertie would lessen but not eliminate the impact of the higher cost projects placed in service without revision in the current rate structure. We have not explored what effect, if any, the intertie would have on the repayment ability of the Bureau of Reclamation's Central Valley project.

RESERVATION OF FIRM POWER FOR PRIVATE UTILITIES

Section 17 of contracts with five private utilities executed in 1953 or 1954 for terms of about 20 years (each expiring August 31, 1973), provides for the allocation of available power. This section establishes the order of priority consistent with the declared purpose of the Bonneville Project Act, as amended, the Federal reclamation laws, and section 5 of the Flood Control Act of 1944, which among other things gives preference and priority to public bodies and cooperatives. The Administrator in this section represented that the following schedule would be adhered to in order to assure that the available supply of firm electric power and energy will be distributed in accordance with the declared purpose of the various laws:

After supplying the present and estimated future needs of preference customers (1 million kilowatts in 1953 and about 1,800,000 kilowatts by 1960) and the requirements of industrial customers under existing contracts (1,052,460 kilowatts) and other contracts included in the total priority requirements, section 17 provides for a reservation of 500,000 kilowatts of firm power to supply a part of the private utilities requirements for domestic and rural consumers. Section 17 also provides for an amount not to exceed 70,000 kilowatts of firm power for industrial consumers in addition to the 1,052,460 kilowatts requirements under existing contracts. Section 17 further provides that the private utilities will be entitled to purchase an additional amount of 1 million kilowatts of firm power after the above requirements have been met.

By letters dated August 14, 1958, the Bonneville Power Administration advised the five private electric utilities concerned that pursuant to terms of their contracts for the contract year beginning September 1, 1958, BPA will have at least 500,000 kilowatts of firm power available and therefore will offer 70,000 kilowatts to industrial customers under long-term contracts. Moreover, because of the availability of 500,000 kilowatts of firm power the Administration would bill the private utility companies on the basis of a computed demand in accordance with existing contract terms.

A review of the demand for the period September 1958 to February 1959 of the five private electric utilities having contracts containing the above-mentioned section 17 disclosed that the demand exceeded 500,000 kilowatts each month ranging from about 532,000 kilowatts in September 1958 to about 709,000 kilowatts in November 1958.

Of the 70,000 kilowatts referred to in the August 14, 1958, letter from the Administration, 20,000 kilowatts were sold on a long-term basis to Harvey Aluminum effective August 31, 1958, in accordance with the provisions of section 4(b) of contract No. 14–03–001–11965 dated September 13, 1955.

The remaining 50,000 kilowatts were offered to industrial customers first on a 2-year basis in the spring of 1958 then on a 5-year basis in the winter of 1958–59. Of the 50,000 kilowatts about 15,000 kilowatts have been sold to industries on a short term basis of 2 years which we understand is being increased to 5 years; the remaining 35,000 kilowatts have not been sold.

We hope that our comments will be helpful to the subcommittee in considering the proposed intertie between Oregon and California.

Sincerely yours,

JOSEPH CAMPBELL,
Comptroller General of the United States.

MARCH 20, 1959.

Hon. CLINTON P. ANDERSON,
Chairman, Subcommittee on Irrigation, and Reclamation, U.S. Senate.

DEAR SENATOR ANDERSON: We have been advised of the hearing you have called for April 8–9 on the Bonneville (Pacific Northwest) intertie and related matters. We are pleased that you are going into this situation and feel that constructive results will follow.

One of the background phases of this problem is the lack of market for the Bonneville's system power. Discussions on the intertie have centered on the delivery of seasonal or dump power to California when it is not required in the Pacific Northwest. The absence of a market for this type of power is adversely affecting Bonneville's financial picture.

It has come to our attention that there is another phase of the problem that we request you inquire into at the April 8–9 hearings, with respect to its effect on Bonneville's financial status. This relates to contracts the Secretary of the Interior, Douglas McKay, entered into with private utilities on October 20, 1953, whereby approximately 500,000 kilowatts of firm power is frozen for these operators whether or not they take the volume which is allocated to them. There is, of course, provision for protection of preference customers.

We assume you will desire to ask the Comptroller General for his views on this particular phase of the problems, as well as those of the Secretary of the Interior.

If we can be of assistance, please advise.

Sincerely,

WARREN G. MAGNUSON.
HENRY M. JACKSON.

SUMMARY ANALYSIS OF FINANCIAL STATUS OF COLUMBIA RIVER POWER SYSTEM, APRIL 1959

GENERAL COMMENTS

The power activities in the Columbia River Basin are commonly known as the Columbia River power system. This system consists of the Bonneville Power Administration and multiple-purpose projects of the Corps of Engineers and the Bureau of Reclamation for which the Bonneville Power Administration is the power-marketing agent. The transmission system and the hydroelectric plants of these multiple-purpose projects are operated as an integrated power system. There are no steam plants in the system.

During fiscal year 1958 Bonneville Power Administration sold energy generated by projects in the Columbia River power system to 114 customers consisting of 75 publicly owned distributors of power, 11 Federal agencies, 9 privately owned utilities, and 19 industrial concerns. About 40.4 percent of the total sales of electric energy were made to industrials.

The following multiple-purpose projects, together with the transmission system of the Administration, comprise the Columbia River power system.

Agency and projects	Initial operation of first unit (fiscal year)	Kilowatts	
		Installed capacity June 30, 1958	Ultimate installed capacity of initial development
Corps of Engineers, in operation:			
Bonneville Dam	1938	518,400	518,400
McNary	1954	980,000	980,000
Detroit-Big Cliff	1954	118,000	118,000
Albeni Falls	1955	42,600	42,600
Lookout Point-Dexter	1955	135,000	135,000
Chief Joseph	1956	960,000	1,024,000
The Dalles	1957	339,000	1,119,000
Corps of Engineers, under construction:			
Ice Harbor			270,000
Cougar			25,000
Hills Creek			30,000
John Day			1,304,400
Total Corps		3,093,000	5,566,400
Bureau of Reclamation, in operation:			
Columbia Basin	1942	1,944,000	1,944,000
Hungry Horse	1953	285,000	285,000
Yakima (Kennewick division)	1956	12,000	12,000
Bureau of Reclamation, under construction: Yakima (Roza division)			11,250
Total Bureau		2,241,000	2,252,250
Combined total		5,334,000	7,818,650

The following tabulation summarizes the capacity placed in service by fiscal years and cumulatively to date.

Fiscal year	Kilowatts		Fiscal year	Kilowatts	
	Installed capacity added	Cumulative capacity in service		Installed capacity added	Cumulative capacity in service
1951		2,374,400	1955	443,400	3,583,800
1952	108,000	2,482,400	1956	567,200	4,151,000
1953	122,500	2,604,900	1957	551,000	4,702,000
1954	540,500	3,145,400	1958	632,000	5,334,000

The projected Federal hydroelectric powerplant construction program in the Columbia River Basin will provide a total of 9,270,650 kilowatts of installed capacity; 7,818,650 kilowatts of capacity will be in service by June 1968 under the present construction schedule.

STATUS OF COST ALLOCATIONS

The allocation to purposes of construction costs of multiple-purpose projects is important because the charges to beneficiaries for certain services of the projects are determined on the basis of the allocated costs incurred. Firm cost allocations must be established before the financial results from operations and status of repayment can be properly determined.

Although many of the multiple-purpose projects including power in the Columbia River power system have been in operation for several years, firm construction cost allocations have been made for only 3 of the 10 projects in operation at June 30, 1958. The construction costs allocable to power and the annual power charges must be finally determined before power rates can be properly established in accordance with the requirements of section 5 of the Flood Control Act of 1944, section 7 of the Bonneville Project Act, and other acts. The General Accounting Office audit reports have consistently urged that firm construction cost allocations be established.

For projects in operation at June 30, 1958, the following summary shows the status of and bases for the construction cost allocations to the several purposes in the fiscal year 1958 financial report on the Columbia River power system. Cost allocations for the several projects under construction by the Corps of Engineers at June 30, 1958, are being prepared at the field level. A tentative allocation of the total costs to date of the Roza division has been made by the Bureau of Reclamation.

Bonneville Dam project.—Allocation of the construction cost of the Bonneville Dam project is governed by the Bonneville Project Act (16 U.S.C. 832). Section 7 of the act provides:

> "In computing the cost of electric energy developed from water power created as an incident to and a byproduct of the construction of the Bonneville project, the Federal Power Commission may allocate to the costs of electric facilities such a share of the cost of facilities having joint value for the production of electric energy and other purposes as the power development may fairly bear as compared with such other purposes."

The report by the Chief Engineer of the Federal Power Commission dated June 15, 1945, stated that, in the light of a careful study of the language of the act, and particularly section 7, it was concluded that the Congress did not intend that a major share of the joint cost should be allocated to electric facilities. Accordingly, the Chief Engineer's report proceeded on a premise that the language of the act permitted allocation of joint costs to the primary purpose (navigation) of 50 percent as a minimum limit and to the subordinate purpose (power) of 50 percent as a maximum limit. After determining that rate schedules in effect would repay power costs, including amortization of specific power facilities and a 50-percent allocation of joint costs, the Commission divided joint costs equally between power and navigation. This allocation is considered to be firm.

McNary Dam project.—The River and Harbor Act of 1945 (59 Stat. 22) makes provisions of the Bonneville Project Act applicable to the marketing of electric energy from the McNary Dam project. Accordingly, the Federal Power Commission is authorized to allocate the construction costs of the project to power and nonpower purposes. In an interim report issued December 4, 1953, the Commission allocated 97.5 percent of the joint costs to commercial power and 2.5 percent to navigation. The separable costs-remaining benefits method was used.

By letter dated December 18, 1958, the Chairman of the Federal Power Commission transmitted to the Assistant Secretary of the Interior revised data on the allocation of costs of the McNary and Ice Harbor projects compiled by the Division Engineer, North Pacific Division, Corps of Engineers. The revised construction cost allocation data shown in the corps' analysis on the McNary project allocated about 81 percent of the joint-use cost to power and 19 percent of the joint-use cost to navigation. In the letter the Chairman of the Commission stated that the cost allocation results shown in the revised data were satisfactory for use in the Bonneville Power Administration rate studies for the 5-year period commencing December 20, 1959.

Albeni Falls, Detroit-Big-Cliff, Lookout Point-Dexter, Chief Joseph, and the Dalles Dam projects.—Under the provisions of section 5 of the Flood Control Act of 1944 (16 U.S.C. 825s), the Secretary of the Interior became the marketing agent for energy generated by projects constructed and operated by the Corps of Engineers that is excess to project needs. The Bonneville Power Administration has been designated the marketing agent for these projects in the Columbia River basin. The act, however, does not specify who shall make an

allocation of the construction costs. Tentative allocations of the joint facilities construction costs have been made by the Corps of Engineers as follows:

[Percent]

	Albeni Falls	Detroit-Big Cliff	Lookout Point-Dexter	The Dalles
Commercial power	97.37	44.27	25.94	[1] 92.72
Flood control	1.48	46.72	65.66	
Navigation	1.15	.30	1.21	[1] 7.28
Irrigation		7.77	7.19	
Municipal water supply		.94		
Total	100.00	100.00	100.00	100.00

[1] Revised tentative allocations of the joint facilities construction costs made by the Corps of Engineers for use in the current power rate review being made by Bonneville Power Administration allocates 76.1 percent of the joint costs to power and 23.9 percent of the joint costs to navigation.

Firm agreement has been reached between the Corps of Engineers and the Department of the Interior on the allocation of the entire construction costs of the joint facilities at the Chief Joseph project to commercial power. Due to related irrigation development by the Bureau of Reclamation at the Chief Joseph project some amount may be assigned to irrigation at a later date but the amount is not expected to be significant and should not materially affect the financial statements.

Columbia Basin project.—Allocations of the construction cost of this project have been made by the Secretary of the Interior under the provisions of the Reclamation Project Act of 1939 (43 U.S.C. 485h). Property, plant, and equipment determined to be jointly useful for power generation and for other purposes, consisting principally of the dam, reservoir, and general service facilities have been allocated 56 percent to commercial power (including downstream river regulation) and 44 percent to irrigation after assigning $1,000,000 to navigation. Specific power facilities (principally powerhouses and generating equipment), exclusive of the cost of the 3 generating units and related electrical facilities installed in addition to the original 15 units, have been allocated to commercial power and to irrigation pumping power in proportion to the relative value of power delivered for each purpose. The cost of the three additional generating units and related electrical facilities has been assigned to commercial power.

The percentages of 56 for power and 44 for irrigation were determined on the basis of differences between costs of single-purpose irrigation and power projects and the corresponding direct irrigation and power costs, respectively, in the multiple-purpose Columbia Basin project. A gravity plan was used at the irrigation alternative to the present multiple-purpose project. A combination of three projects on the Columbia River that would produce about the same benefits to power, including downstream power benefits, was used as the power alternative. The allocation of the construction costs of the Columbia Basin project is considered to be firm at the time this memorandum was submitted. We understand, however, that with certain modifications of the project currently being considered, an allocation of costs to the flood control purpose may be appropriate.

Hungry Horse project.—An allocation of the construction costs of Hungry Horse project has not been made by the Secretary of the Interior. A tentative allocation of the costs of property, plant, and equipment determined to be jointly useful for power generation and flood control purposes has been made by the Bureau of Reclamation. Such property costs have been allocated 74.32 percent to commercial power (including downstream river regulation) and 25.68 percent to flood control in accordance with the tentative allocation.

Yakima project (Kennewick division).—An allocation of the costs of the Yakima project has not been made by the Secretary of the Interior.

A tentative allocation of the total costs to date of the Kennewick division has been made by the Bureau of Reclamation. The costs of property, plant, and equipment determined to be jointly useful for power generation and for irriga-

tion have been allocated between these purposes in accordance with the following percentages:

	Percent		
	Power	Irrigation	Total
Prosser diversion dam:			
Original		100.0	100
Additions	100.0		100
Headworks and common facilities	14.6	85.4	100
Chandler Canal—1st section:			
Original		100.0	100
Additions	100.0		100
Chandler Canal—2d section:			
Original		100.0	100
Additions	22.5	77.5	100
General plant	71.2	28.8	100

POWER PRICING POLICIES

The Bonneville Power Administration has the responsibility for fixing commercial power rates at a level which will, over a number of years consistent with the requirements of law, provide repayment of the investment in commercial power and the investment in related irrigation activities assigned for repayment from commercial power revenues. Repayment requirements for the Columbia River power system are found in the varying provisions of the several acts authorizing construction and in the administrative interpretations thereof. Accordingly, system power rates are based on a composite of the requirements of these acts applied to the individual projects and the Administration.

Bonneville Power Administration and Corps of Engineers projects

Rate and repayment requirements for the Bonneville Dam project and the Bonneville Power Administration are governed by the Bonneville Project Act (16 U.S.C. 832f). The act provides that rate schedules shall be drawn having regard to the recovery of the cost of producing and transmitting electric energy excess to project needs, including the amortization of the capital investment over a reasonable period of years. This provision of the Bonneville Project Act was also applied to McNary Dam project by the authorizing legislation for that project.

Rate and repayment requirements have been administratively determined to be the recovery during the period of their respective service lives, of the cost of the power facilities having lives of less than 50 years and the amortization of the remainder of the capital investment in power facilities over a period of 50 years subsequent to the "inservice" date of such facilities together with interest at 2.5 percent per annum on the unrepaid capital investment.

Rate and repayment requirements for the Albeni Falls, Detroit-Big Cliff, Lookout Point-Dexter, Chief Joseph, and the Dalles Dam projects are governed by section 5 of the Flood Control Act of 1944. The provisions of this section are similar to the corresponding provisions (sec. 7) of the Bonneville Project Act and state that rate schedules shall be drawn having regard to the recovery of the cost of producing and transmitting electric energy excess to project needs, including the amortization of the capital investment over a reasonable period of years.

Bureau of Reclamation projects

Columbia Basin projects.—Rate and repayment requirements for the Columbia Basin project, by agreement between Bonneville Power Administration and the Bureau of Reclamation, provide for payments by the Administration which will, over a period of 80 years be equal to—

1. Operation, maintenance, and replacement of facilities allocated to commercial power;

2. Interest at 3 percent on unamortized investment in facilities allocated to commercial power;

3. Investment in commercial power facilities;

4. Assistance to irrigators in repaying the investment in irrigation, estimated to require about $457 million.

The assistance required by irrigation makes it necessary that power rates be at a level which will recover the commercial power investment in about 33 years (1975). Net power revenues after the date will be sufficient to repay the irrigation investment over the remaining 47 years of the project payout period.

Hungry Horse project.—Construction of Hungry Horse Dam and Reservoir was authorized by the act of June 5, 1944 (43 U.S.C. 593a). By the act of May 29, 1958 (72 Stat. 147), the Hungry Horse project was made subject to the provisions of Federal reclamation law. Rate and repayment requirements for the Hungry Horse project through fiscal year 1958 have been determined by the Bonneville Power Administration in the same manner as for projects of the Corps of Engineers.

Pursuant to the provisions of Federal reclamation law, rate and repayment requirements will be such as to provide, over a period of 50 years, amounts equal to—

1. Operation, maintenance, and replacement of facilities allocated to commercial power;

2. Interest at 3 percent on unamortized investment in facilities allocated to commercial power;

3. Investment in commercial power facilities.

Because of the applicability of Federal reclamation law to the Hungry Horse project as a result of the act of May 29, 1958, some adjustment will be necessary in the repayment requirements heretofore established by BPA.

Yakima project (Kennewick division)

Rate and repayment requirements for the Kennewick division of the Yakima project are governed by the Reclamation project Act of 1939, and the authorizing act of June 12, 1948 (62 Stat. 382). The latter act provides an overall payout period of 66 years for the reimbursable investment in power and irrigation, with power revenue assistance to irrigators in repayment of the irrigation investment. It provides also for not less than 2.5 percent interest on the investment in commercial power and the use of one-fifth of such interest to assist in the repayment of the irrigation investment. Assistance necessary is estimated to be about $4,400,000. The assistance required by irrigation makes it necessary that power rates be at a level which will recover the commercial power investment in about 39 years (1995). Net power revenues after that date will be sufficient to repay the irrigation investment over the remaining 27 years of the project payout period.

Summary

Bonneville Power Administration has calculated that commercial power rates which would be sufficient to meet the rate and repayment requirements would return annual revenues of about $17.50 a kilowatt of available generating capacity. While the several rate schedules are uniform in this respect, they vary as to the method used in computing the periodic billing. Essentially, each rate schedule is adapted to the requirements of a particular class of customer having similar patterns of power usage. Customers approaching the maximum utilization (aluminum industry) of their allotted capacity, as measured in kilowatts, pay a lesser amount for each kilowatt-hour of energy used, as opposed to the higher amount per kilowatt-hour paid by customers who do not as fully use their allotted capacity. The BPA rates are frequently referred to as "postage stamp" rates, which means there is generally no rate differentiation based on the customer's location in relation to the generating facilities. Delivery voltage, customer's size, or location from the power source are not considered billing for service, except for a few customers within a 15-mile radius of hydroelectric plants who pay lower rates.

The Bonneville Project Act (16 U.S.C. 832d) provides for equitable adjustment of rates at appropriate intervals, not less frequently than once in every 5 years. The basic level of rates has been unchanged since adopted in 1938 as the revenues have more than met the repayment requirements.

In summary, rates used in the Columbia River power system are based on the total of the following elements: (1) Estimated operating costs, exclusive of depreciation: (2) interest on the unrepaid investment in facilities allocated to commercial power; (3) amounts necessary to repay the investment in commercial power over a period of years established by law or administrative policy pursuant to law; and (4) investment in related irrigation activities which irrigators are not able to repay. The application of power revenues to repayment of irrigation costs does not begin until the power investment has been fully repaid.

MARKETING OPERATIONS—7-YEAR PERIOD ENDED JUNE 30, 1958

The financial results from commercial power operations of the Columbia River power system for the fiscal years 1952 through 1958, adjusted for discontinuance of the practice of deferring interest and depreciation on plant allocated to future downstream river regulation, are summarized in the following tabulation.

	Fiscal year						
	1958	1957	1956	1955	1954	1953	1952
Operating revenues:							
Sales of electric energy	$64,704,008	$64,971,975	$59,789,690	$51,258,723	$44,127,409	$38,383,475	$39,526,432
Other electric revenues	2,025,102	1,427,992	1,202,933	807,759	1,190,284	791,734	653,714
Total operating revenues	66,729,110	66,399,967	60,992,623	52,066,482	45,317,693	39,175,209	40,180,146
Operating expenses:							
Purchased power	475,342	492,585	868,329	488,537	697,339	616,876	624,119
Operation and maintenance expenses:							
Generating projects	7,797,621	5,904,001	5,354,396	4,595,271	3,529,983	2,725,327	2,261,821
Bonneville Power Administration	9,862,867	9,431,686	8,459,459	7,416,206	7,197,669	7,526,535	6,390,933
Depreciation (note 1):							
Generation projects	12,101,388	9,976,509	8,532,800	6,048,480	4,516,841	3,001,643	2,054,172
Bonneville Power Administration	11,606,270	10,278,645	10,007,172	8,869,727	7,594,633	6,679,536	5,285,592
Net loss on sales and abandonment of property	23,288	429,052	182,906	601,385	1,379,976	[1] 12,559	90,784
Total operating expense (note 2)	41,866,776	36,512,478	33,405,062	28,019,606	24,916,441	20,537,358	16,707,421
Net operating revenues	24,862,334	29,887,489	27,587,561	24,046,876	20,401,252	18,637,851	23,472,725
Interest and other deductions:							
Interest on Federal investment (note 3):							
Generating projects (net)	20,197,333	17,016,305	15,278,156	11,768,914	9,027,095	6,202,847	5,539,428
Bonneville Power Administration (net)	7,498,236	6,999,397	6,413,146	5,716,300	4,997,357	4,177,134	3,330,966
Miscellaneous income deductions (net):							
Generating projects	120,297	8,405	[1] 51,380	[1] 75,311	1,716	278,989	102,530
Bonneville Power Administration	[1] 4,031	[1] 102,350	[1] 1,773	[1] 5,278	[1] 13,032	79,292	63,288
Net interest and other deductions	27,811,835	23,921,757	21,638,149	17,404,625	14,013,136	10,738,232	9,027,212
Net commercial power revenues (−loss)	−2,949,501	5,965,732	5,949,412	6,642,251	6,388,116	7,839,589	14,445,513
Kilowatt-hours of electric energy sold (in thousands)	28,365,000	28,216,000	25,974,000	21,823,000	18,765,000	16,382,009	17,023,000
Average selling price per kilowatt-hour (in mills)	2.28	2.30	2.30	2.35	2.35	2.34	2.32
Net income per kilowatt-hour of electric energy sold (in thousands)							
Before interest and other deductions	$0.88	$1.06	$1.06	$1.10	$1.09	$1.14	$1.39
After interest and other deduction (−loss)	−$0.10	$0.21	$0.23	$0.30	$0.34	$0.48	$0.85
Net power revenues expressed as percent of gross revenues	−4.42	8.98	9.75	12.76	14.10	20.16	35.95

[1] Denotes red figures.

NOTES

1. The straight-line method has been used to compute property depreciation for the Bonneville Power Administration, for all projects of the Corps of Engineers (except Bonneville Dam project), and for the Hungry Horse and Yakima (Kennewick division) projects of the Bureau of Reclamation. The compound-interest method, employing an interest factor of 2.5 percent has been used in computing depreciation on most of the property of the Bonneville Dam project of the Corps of Engineers and the Columbia Basin project of the Bureau of Reclamation. Use of the compound-interest method of depreciation results in a lower provision charged toexpenses during the early years of project operation and a higher provision during the later years. This lower provision for depreciation charged to expenses during the early years of project operation is offset by the higher interest on the unrepaid Federal investment. As the investment is repaid, the interest charge is reduced in somewhat the same relationship as the increase in the annual depreciation provision. Under the straight-line method of depreciation, the annual provision remains constant throughout the life of the respective asset.

2. The Bonneville Power Administration and the generating agencies are not required to make payments in lieu of taxes, and accordingly the operating expenses do not include any amounts therefor.

3. The Administration and the Corps of Engineers have included interest at the rate of 2.5 percent on the Federal investment allocated to all purposes with appropriate charges to expense and to property costs. In the Bureau of Reclamation accounts for the Columbia Basin and Hungry Horse projects, interest is recorded at 3 percent on the net investment in commercial power facilities. Under an agreement with Bonneville Power Administration for the purpose of providing uniform data for statements on results of power operations, memorandum records are maintained at Columbia Basin and Hungry Horse projects for interest on investment at a rate of 2.5 percent.

Columbia River power system revenues are the result of rates based on such factors as the number of years allowable for repayment of the investment in power and the assistance to irrigators necessary for repayment of investment in irrigation. The net revenue of the system recognizes a policy of depreciation whereby the cost of the capital assets is apportioned to operating expenses over the estimated service life of the facilities. To state this more simply, if power rates were designed to return investment over the service life of power facilities, the net revenues from operations would be zero except for the effect of repayment of nondepreciable assets such as land. Under such an arrangement, revenues would equal accumulated operation, maintenance, and interest expense and the provisions for depreciation. To the extent that rates are set at a level requiring the return of commercial power investment in less than service lives of facilities and to the extent that the rates must furnish a subsidy to irrigation, the revenues will exceed operation, maintenance, and interest expense and provisions for depreciation.

The expansion of the system will have an effect on net revenues, and when new projects have been added at a relatively high cost, the effect may be to decrease net revenues. This has happened on CRPS and is best shown by the gross revenue to net revenue ratio. The decrease in the return on gross revenue from 35.95 percent (1952) to —4.42 percent (1958) is largely the result of the increasing proportion of gross revenue required to meet depreciation and interest expenses of these projects together with below normal revenues and power and energy requirements because of the business recession and the unusually mild winter experienced in fiscal year 1958. Until 1952 only the Bonneville Dam project and Columbia Basin project were in operation. Since that time projects built at much higher construction cost levels than those existing when Bonneville and Columbia Basin projects were constructed have been placed in operation. The higher construction cost level is disclosed in the increased capital investment per kilowatt of capacity and consequent increase in depreciation and interest expense.

The advent of higher cost projects, which has had the effect of reducing net revenues through a disproportionate increase in depreciation and interest charges, will increase repayment requirements and may require a general rate increase for the Columbia River power system. Decision by BPA as to the necessity for a rate increase, however, will be based principally on consideration of the repayment requirements of power and irrigation and not on declining net revenues, the latter being only an indication of the possible need. The following tabulation demonstrates the increase in the investment per kilowatt of installed capacity resulting from higher cost projects.

Project	Operation of first unit (fiscal year)	Number of main generators	Installed capacity in main generators (kilowatts)	Total allocation of construction investment to power	Power allocation per kilowatt installed
Corps of Engineers, in operation:					
Bonneville Dam	1938	10	518,400	$59,509,000	$115
McNary	1954	14	980,000	282,239,000	288
Detroit-Big Cliff	1954	3	118,000	41,864,000	355
Albeni Falls	1955	3	42,600	31,842,000	[1] 747
Lookout Point-Dexter	1955	4	135,000	41,793,000	310
Chief Joseph	1956	16	1,024,000	158,733,000	155
The Dalles	1957	14	[2] 1,092,000	251,026,000	230
Total		64	3,910,000	867,006,000	
Corps of Engineers, under construction:					
Ice Harbor	1962	3	270,000	104,565,000	387
Cougar	1962	2	25,000	12,929,000	517
Hills Creek	1962	2	30,000	16,208,000	540
John Day	1967	12	[3] 1,200,000	326,503,000	272
Total		19	1,525,000	460,205,000	
Bureau of Reclamation in operation:					
Columbia Basin	1942	18	1,944,000	202,209,000	104
Hungry Horse	1953	4	285,000	86,737,000	304
Yakima (Kennewick Division)	1956	2	12,000	3,822,000	319
Total		24	2,241,000	292,768,000	
Bureau of Reclamation, under construction: Yakima (Roza Division)	1959	1	11,250	[4] 3,604,000	320
Total		108	7,687,250	1,623,583,000	

[1] In addition to generation of power at the site, downstream hydroelectric projects benefit substantially by the increased power potential through regulation of river flow resulting from controlled releases of water from the reservoir.
[2] Exclusive of two fishway units with a combined capacity of 27,000 kilowatts.
[3] Capacity of each of the 12 main generator units was changed from 100,000 kilowatts to 108,700 kilowatts subsequent to the above determination—a total installed capacity increase of 104,400 kilowatts.
[4] Includes allocation of specific power capital costs of $2,645,000 allocable to irrigation pumping.

FEDERAL INVESTMENT AND STATUS OF REPAYMENT

All funds expended by the Columbia River Power System and Related Activities for property, plant, equipment, or other assets and the expenses of operation and maintenance are obtained by congressional appropriation, except that Bonneville Power Administration may use a continuing fund to defray emergency expenses and to assure continuous operation.[1] Interest, included as a part of the Federal investment, does not represent congressional appropriation of funds to the power system. It is a recorded estimate of the Treasury borrowing costs applicable to the system, arrived at by applying a 2.5 percent interest factor to the net Federal investment in commercial power and certain other purposes. The net cost of materials and services transferred from other Federal agencies, included in the Federal investment, does not represent appropriations to the system but the actual or estimated costs of such materials and services.

The following schedule shows the net investment of the United States in the Columbia River Power System and Related Activities at June 30, 1958. The net investment is segregated between power and nonpower and includes all activity since inception.

[1] Relatively minor contributions have been made by others in aid of construction, as follows: Columbia Basin project, $317,670; Lookout Point-Dexter project, $1,299; Chief Joseph, $132; Yakima project, Kennewick and Roza Divisions, $241,169; and Ice Harbor project, $82,500.

	Total	Power	Nonpower
Investment of U.S. Government:			
Appropriations by the Congress	$2,255,727,472		
Cost of materials and services furnished by other Federal agencies, net	24,610,349		
Interest on Federal investment:			
Charged to operations	212,849,835		
Charged to construction	84,683,647		
Revenues transferred to continuing fund	1,833,035		
Total investment of U.S. Government	2,579,704,338	$1,937,409,749	$642,294,589
Less:			
Funds returned to U.S. Treasury:			
Repayment of Federal investment in power programs (including amounts for operating expenses and interest)	580,481,605	580,481,605	
Repayment of Federal investment in nonpower programs	13,290,464		13,290,464
Total expenses of nonpower programs and other nonreimbursable expenses	37,639,118		37,639,118
	631,411,187	580,481,605	50,929,582
Net investment of U.S. Government	1,948,293,151	1,356,928,144	591,365,007

The amount shown for appropriations by the Congress includes funds which have been provided for operation and maintenance activities in addition to the funds provided for the construction program. Included in the total investment for nonpower are unallocated construction work in progress and other unallocated assets (at Ice Harbor, Cougar Dam, Hills Creek, and John Day project) totaling $60,974,429.

The following tabulation compares at June 30, 1958, the repayment of Federal investment in commercial power achieved by current power rate levels with the scheduled repayment of capital investment established by law or administrative policy pursuant to law.

	Accumulated funds for commercial power operations returned to U.S. Treasury	Less amounts equivalent to—		Remainder applied to amortization of capital investment	Scheduled repayment June 30, 1958	Excess of funds returned over scheduled repayment
		Operation and maintenance expenses	Interest charged to operations			
Bonneville Dam	$61,435,242	$12,914,932	$21,705,804	$26,814,506	$14,814,000	$12,000,506
Columbia Basin	151,021,102	25,084,896	60,552,416	65,383,790	65,383,790	
Hungry Horse	20,531,905	1,846,710	11,168,394	7,516,801	5,560,000	1,956,801
Albeni Falls	5,786,063	785,988	2,938,703	2,061,372	1,443,000	618,372
McNary Dam	46,099,005	5,058,416	20,670,018	20,370,571	10,758,000	9,612,571
Detroit-Big Cliff	9,256,577	1,297,696	4,615,792	3,343,089	2,441,000	902,089
Lookout Point-Dexter	6,509,494	803,855	3,286,500	2,419,139	1,694,000	725,139
Chief Joseph	10,957,059	1,897,505	5,476,567	3,582,987	2,668,000	914,987
Yakima (Kennewick division)	615,000	139,751	205,253	269,996	269,996	
The Dalles Dam	2,629,056	867,842	1,069,229	691,985	495,000	196,985
Bonneville Power Administration	265,641,102	90,402,402	57,724,937	117,513,763	68,096,000	49,417,763
Total	580,481,605	141,099,993	189,413,613	249,967,999	173,622,786	76,345,213

Power receipts returned to the Treasury have been first applied to the repayment of operation and maintenance and interest expenses, with the remainder being applied to amortization of the capital investment in commercial power. On projects in which part of the irrigation investment is assigned for repayment from commercial power revenues, the assistance is assumed to begin after repayment of the commercial power investment. Commercial power rate and repayment requirements are affected by irrigation assistance to the extent that the assistance makes necessary the recovery of commercial power investment in a shorter period of years.

During fiscal year 1958 amounts returned to the Treasury in repayment of the Federal investment in power were deficient by $2,684,000 when compared with the scheduled repayment. Of the $67,783,000 returned, $17,167,000 was applied to repayment of operation and maintenance expense; $27,695,000 was applied to interest; and the remainder, $22,921,000, was applied to amortization of the capital investment. Scheduled repayment of the capital investment for fiscal year 1958 amounted to about $25,605,000. As shown in the tabulation above, however, total replayments exceed scheduled repayments at June 30, 1958, by $76,345,213.

Senator ANDERSON. Mr. Milgate, will you proceed, please.

STATEMENT OF JOHN MILGATE, SUPERVISORY ACCOUNTANT, CIVIL ACCOUNTING AND AUDITING DIVISION, GENERAL ACCOUNTING OFFICE; ACCOMPANIED BY E. W. MUHONEN, ASSISTANT DIRECTOR, CAAD; AND OWEN KANE, OFFICE OF LEGISLATIVE LIAISON

Mr. MILGATE. Mr. Chairman, my name is John Milgate. I am a supervisory accountant, Civil Accounting and Auditing Division, General Accounting Office. With me today are Mr. E. W. Muhonen, Assistant Director, who has overall responsibility for this particular area, and Mr. Owen Kane, Office of Legislative Liaison.

We are pleased to be here today to furnish the subcommittee assistance. We consider the furnishing of information to the Congress as one of our most important responsibilities and we are gratified that the subcommittee requested information from our office as an aid in considering the matter you have before you.

Pursuant to the chairman's letter request dated March 2, 1959, we have prepared a summary analysis of the financial status of the Columbia River power system. This analysis was based largely on audited financial statements of the Columbia River power system. Beginning with fiscal year 1953 the annual audit of CRPS has been performed by the General Accounting Office. For fiscal year 1952 and prior fiscal years the annual audit was performed by a leading national public accounting firm.

The Columbia River power system consists of the Bonneville Power Administration, the power marketing agency, and 14 multiple purpose projects of the Corps of Engineers and the Bureau of Reclamation. Ten of these projects with an installed capacity of 5,334,000 kilowatts were in operation at June 30, 1958.

At this point I would like to mention that the 10 projects include a consideration of Detroit-Big Cliff as one project, whereas Dr. Pearl earlier in these hearings considered those as separate projects. Similarly Lookout Point-Dexter was considered in the summary analysis as a single project.

The accounts and related records of these projects are maintained at the headquarters office of the Bonneville Power Administration, three separate project offices of the Bureau of Reclamation, and three district offices of the Corps of Engineers.

To June 30, 1958, the net investment of the United States in the Columbia River power system and related activities amounted to $1,948,293,000, of which $1,356,928,000 represented the unrepaid Federal investment in power facilities.

During recent years net power revenues of the Columbia River power system have been declining and in fiscal year 1958 a loss of

about $2,950,000 was sustained. System projects placed in service during recent years have been built at higher construction cost levels than the Bonneville Dam project and Grand Coulee Dam (Columbia Basin project) which were the first projects in the system.

Because the BPA commercial power rate level has not increased since 1938, depreciation and interest expenses on higher cost projects have increased proportionately more than the gross revenues derived from the added generating capacity. The increase in these fixed charges, together with a general rate level that has remained constant, has resulted in lower net revenues. In addition, in fiscal year 1958 this condition was compounded due to the economic recession and mild winter weather conditions.

Net revenues, however, are not necessarily the criteria to be applied in determining the adequacy of rate levels of the Columbia River power system and should not be used without qualification. Power rates of the Columbia River power system are established at a level which will, over a number of years consistent with the requirements of law provide (1) repayment of the investment in commercial power together with interest on the unamortized Federal investment and (2) repayment of the investment in related irrigation activities assigned for repayment from commercial power revenues.

During fiscal year 1958 amounts returned to the Treasury in repayment of the Federal investment in power were deficient by $2,684,000 when compared with the scheduled repayment. Of the $67,783,000 returned in fiscal year 1958, $17,167,000 was applied to repayment of operation and maintenance expense; $27,695,000 was applied to interest; and the remainder, $22,921,000, was applied to amortization of the capital investment. Scheduled repayment of the capital investment for fiscal year 1958 amounted to about $25,605,000. At June 30, 1958, however, total repayments of capital investment exceeded scheduled repayments by $76,345,000.

The summary analysis of financial status of the Columbia River power system furnished to the subcommittee with a letter of the Comptroller General dated April 3, 1959, amplifies and sets forth certain other financial aspects of the power system.

I would like to say that we have in process a letter which answers additional questions that you had regarding the sale of surplus dump power, and that our comments relating to that were submitted to the Comptroller General this morning prior to any discussion here, and that our comments are based principally on discussions that we had with representatives of the Bonneville Power Administration in Portland, Oreg., at the time.

Senator ANDERSON. If it is true that a loss of $2,950,000 was sustained on the project during fiscal year 1958, would the Comptroller General of the United States look with favor on a contract that is going to return only a mill and a half net to the Administration, or should the rates be going up?

Mr. MILGATE. It is our understanding based on the discussions which we had with representatives of Bonneville Power Administration that the net revenues would amount to approximately $1 million a year.

Senator ANDERSON. It would still be operating at a loss.

Mr. MILGATE. That is right.

Senator ANDERSON. What is the interest rate that is being charged on the unamortized debt?

Mr. MILGATE. 2½ percent.

Senator ANDERSON. What is the average yield on long-term Government bonds?

Mr. MILGATE. I don't have that information right at hand.

Senator ANDERSON. On the Colorado River project, the Department of the Interior insisted upon writing into the bill a provision that the interest rate—I am stating it roughly now—should be the average yield on 15-year bonds. Not the average price of interest paid by the Government, but the average yield. The average yield on long-term Government bonds is somewhere in the neighborhood of 3.8 or 3.75. Anyhow, it is closer to 4 percent than it is to 3.5. What would be the effect if you applied 3.5 percent interest to the Columbia River project? What would the loss be then?

Mr. MILGATE. We have not made a study which would show what the effect would be based on 3.5 percent.

Senator ANDERSON. What was the interest cost at 2.5?

Mr. MILGATE. During fiscal year 1958, $27,695,000 was applied to interest during that period.

Senator ANDERSON. So that is at 2.5 percent. If it was 3.5 percent, you know it would be nearly $40 million.

Mr. MILGATE. It would be considerably in excess of the $27,695,000.

Senator ANDERSON. We would have a deficit of about $15 million if you put down what the yield of the Government bonds is.

Mr. MILGATE. Yes, sir.

Senator ANDERSON. The Government cannot borrow money at 2.5 percent now, can it?

Mr. MILGATE. No, sir.

Senator ANDERSON. The last bonds that were put out that had a 5-year maturity were 4 percents. The last call money was up to 3.6 or so.

Mr. MILGATE. I do not recall what the rate was.

Senator ANDERSON. At least it is above 3 percent. I don't know who worked it out, but when the Joint Committee on Atomic Energy was considering the advantages or disadvantages of a dual-purpose reactor at Hanford they estimated that the value of Bonneville power was going to be 3.5 mills or 3 plus something. Maybe you can give me the figure, Dr. Pearl.

Dr. PEARL. I don't recall the exact figure.

Senator ANDERSON. It was well over 3 mills by the next 15 or 20 years. If the value of Bonneville power is over 3.5 mills, why would you sell it for 2.5 or 1.5? Would that be a question that would naturally go to the General Accounting Office? Is there any requirement in the law that have to get what the power is worth?

Mr. MILGATE. I would like to mention that the unrepaid Federal investment which we are talking about has been incurred over a period of years. This extends from, say, 1938 up through the present projects which are being constructed.

To answer your question specifically, on projects constructed by the Corps of Engineers, there is no requirement in law to pay 2.5 percent on the unrepaid Federal investment.

Senator ANDERSON. You better explain that. You mean there is no requirement to pay anything, or there is no requirement to pay just 2.5, and it might be 3.5, or 4?

Mr. MILGATE. There is no requirement to pay interest.

Senator ANDERSON. Not any interest at all?

Mr. MILGATE. No, sir; not in the Flood Control Act of 1944. I would like to mention that under the Reclamation Project Act of 1939, on those projects which are in the Columbia River power system, constructed by the Bureau of Reclamation, there is a 3 percent interest requirement.

Senator ANDERSON. Have you a mixed rate, then?

Mr. MILGATE. Yes, sir.

Senator ANDERSON. Zero in certain spots and 3 percent in certain spots, so that the average is 2.5?

Mr. MILGATE. For the purposes of this report, the Bureau of Reclamation maintains records in which they use a 2½ percent rate. To that extent there has been consistency in these particular reports.

Senator ANDERSON. I am not nearly as interested in consistency as I am in what the law requires. If the law requires that the Bureau of Reclamation project be figured at 3 percent, how much of the total debt is involved in the 3 percent category?

Mr. MILGATE. That consists of the Hungry Horse, Yakima, and the Columbia Basin projects.

Senator ANDERSON. You said there is $1,948,000,000 in the project now?

Mr. MILGATE. Yes, sir.

Senator ANDERSON. I want to get that one thing straight. There is an unrepaid balance of $1,356,928,000, is that right?

Mr. MILGATE. There is an unrepaid balance of $1,356,928,000; that is correct.

Senator ANDERSON. How much of that debt should bear 3 percent interest?

Mr. MILGATE. The Columbia Basin project, amounting to about $142,842,000; the Hungry Horse project, amounting to about $80,402,000; the Yakima project, $4,103,000.

Senator ANDERSON. Only a very small portion of that debt is at 3 percent interest.

Mr. MILGATE. Relatively; yes, sir.

Senator ANDERSON. How do you pay to the Government 2.5 percent on the whole debt? Do you know, Doctor?

Dr. PEARL. We do pay 2.5 percent on the whole debt.

Senator ANDERSON. Under what provision of law?

Dr. PEARL. It is a rather complicated answer.

Senator ANDERSON. Maybe I better pass that for a week.

Dr. PEARL. Maybe I better write that up and provide it for the record if you would like to have it.

(The material requested is as follows:)

U.S. COLUMBIA RIVER POWER SYSTEM STATEMENT IN REGARD TO RATE OF INTEREST

1. *Present rates*

(*a*) BPA and the Corps of Engineer projects for which BPA is the marketing agent use an interest rate of 2½ percent per annum. This rate was established at the time the Federal Power Commission made the allocation of the costs of the Bonneville Dam project. The Commission's allocation order was issued in June

1945. The Commission obtained information from the Treasury Department showing that during the 11 years, 1933 to 1943, inclusive, when the Bonneville Dam was under construction, the cost of money on new Federal bond issues averaged about 2.4 percent. This was rounded to 2.5 percent.

(*b*) The Columbia Basin project (Grand Coulee) uses a rate of 2½ percent for memorandum cost accounting purposes but a rate of 3 percent in its official accounts and for its payout schedules.

(*c*) The Hungry Horse project uses a rate of 2½ percent for memorandum cost accounting purposes but a rate of 3 percent for its official accounts and payout schedules. The situation is similar to that for the Columbia Basin project.

(*d*) For the Kennewick division of the Yakima project, that is, the Chandler powerplant, a minimum rate of 2½ percent is prescribed by law. Moreover, the law provides that one-fifth of the interest component may be applied to repayment of the irrigation subsidy. The 2½ percent rate is used by this project for both cost and payout.

(*e*) For the Roza division of the Yakima project, that is, the Roza powerplant the facts are the same as for Hungry Horse project.

2. *Legal provisions*

With the exception of the Kennewick division of the Yakima project, none of the statutes applicable to the projects in the Columbia River power system specifies a rate of interest or expressly requires that interest be included in costs or payout requirements.[1] The law governing the Kennewick division of the Yakima project (Chandler powerplant) specifies a rate of not less than 2½ percent per annum but provides that one-fifth of the interest component may be applied toward repayment of the irrigation subsidy.

Subsection 9(c) of the Reclamation Project Act of 1939 refers to a rate of 3 percent per annum but it was held by a former Solicitor for the Department that subsection 9(c) is a minimum rate provision and not a repayment requirement. The Solicitor's opinion held that the power rates as a minimum must provide revenues (over and above operation and maintenance expenses) equal to 3 percent, as a minimum, on the gross power investment without reduction of that rate base because of any repayments of the investment to the Treasury so long as power operations continue. In other words, the 3 percent provision was considered to be a gross revenue or return requirement rather than a requirement for the payment of true interest on the diminishing unpaid remainder of the power investment. Moreover, such revenues, according to the opinion, can be applied to the repayment of the power investment and of the portion of the irrigation investment assigned for return from power revenues. Hence, while interest in the usual or true sense is thus not required to be included in the cost accounts or payout requirements, the 3 percent gross return is a rate requirement. The opinion also held that if the amount of revenues produced by the 3 percent gross return was not adequate to return the amount of investment repayable from power revenues, the percentage of return, and thus the power rates, would have to be higher by such amount as would be necessary to effect such repayment.

Despite this ruling by a former Solicitor, the rate and repayment plans and accounts for the reclamation projects for which BPA is the power marketing agent provides for the payment of true interest on the unpaid power investment. For further details as to the rate of interest applied at each such Reclamation project, see the statement on "present rates" in part 1 of this statement.

The Bonneville Project Act, which is applicable to BPA, Bonneville Dam, McNary Dam and the four lower Snake River projects, provides, among other things, in section 7, that power rates shall be drawn having regard to the recovery of the "cost" of producing and transmitting electric energy. Identical language appears in the Flood Control Act of 1944 which governs the rates and

[1] This statement is subject to one further modification. The Crooked River Reclamation Project Act and the act authorizing the Foster Creek division of the Chief Joseph project specifically require repayment of the irrigation costs which are beyond the ability of the water users to repay out of the power revenues of The Dalles and Chief Joseph projects, respectively, in addition to the power revenues required to amortize the power investment at The Dalles and Chief Joseph and to return interest on unamortized balances thereof. In view of this legislation (enacted long after the authorization of the projects, and enacted for the purpose of providing power revenue assistance to the two irrigation projects), it might be argued, although not without some uncertainty, that interest is required by law in the case of the The Dalles and Chief Joseph projects.

payout of the other Corps of Engineer projects. The term "cost" is not defined. Arguments can be advanced on both sides of the question as to whether the term "cost" includes interest.[2]

3. *Federal interest rates*

Interest rates on Federal obligations have been rising in recent years although there also have been some periods of decline. Nevertheless, current rates are considerably above those of a few years ago.

Throughout the decade of the 1940s the rate of interest on the total public debt averaged less than 2.50 percent. In fact, on the marketable issues the average rate often was under 2 percent. More recent trends of the average interest rate on both marketable obligations and the total interest-bearing debt of the U.S. Government are shown in the following tabulation:

Average interest rate on Federal debt

Date	On total marketable obligations	On total interest-bearing debt	Date	On total marketable obligations	On total interest-bearing debt
	Percent	*Percent*		*Percent*	*Percent*
Dec. 31, 1954	1.963	2.291	Dec. 31, 1957	2,965	2,889
Dec. 31, 1955	2,323	2,490	June 30, 1958	2,546	2,638
June 30, 1956	2.427	2.576	Aug. 31, 1958	2.374	2.534
Dec. 31, 1956	2.591	2.671	Dec. 31, 1958	2.624	2.689
June 29, 1957	2.707	2.730	Mar. 31, 1959	2.799	2.801

Hence, as late as the end of calendar year 1955 the average interest rate on the total debt was under 2.50 percent. On marketable obligations the rate did not go above 2.50 percent on the average until the latter half of calendar year 1956.

The interest rate rose throughout 1956 and 1957, reaching up nearly to 3 percent by the end of 1957. Some decline followed, reaching a low point at the end of August 1958 when the rate on marketable obligations again averaged under 2½ percent and the rate on the total interest-bearing debt was just barely above 2½ percent. Following that low point, the rates turned up again and stood at almost precisely 2.8 percent at the end of March 1959.

These data are averages which are therefore influenced by rates on issues brought out quite some years ago. Current rates on long-term U.S. bonds are in the neighborhood of 4 percent. On the other hand, it must be borne in mind that a good deal of the capital investment in the power system was made prior to this recent period of higher interest rates.

Impact of an increase in the interest rate

The impact of an increase in the interest rate on the annual payout requirements of the Columbia River power system would be different under different payout methods and plans. There are several other detailed considerations. But to cut through all these points, it is reasonable to say that an increase of one-half of 1 percent in the interest rate would increase payout requirements approximately as follows:

1. Generation costs at Corps of Engineers projects and at Hungry Horse project would be increased about 8 percent. The precise amount, however, would vary from project to project, depending upon a number of factors, and as a general proposition the percentage increase would be slightly less under the flat 50-year payout method than under the modified service life method.

2. Generation costs at projects such as Grand Coulee would be increased less than 8 percent because a significant part of the costs to be repaid is non-interest-bearing assistance to irrigation. Hence, the impact will vary with the relative

[2] The statutory language under consideration is that rate schedules shall be drawn having regard to the recovery "of the cost of producing and transmitting such electric energy, including the amortization of the capital investment over a reasonable period of years." As a general proposition, the term "amortization" does not necessarily include interest or mean repayment with interest. However, in the floor debate prior to the passage of the Bonneville Project Act, the late Senator McNary quoted this language and stated that amortization included principal and interest. Hence, there is a basis in legislative history for indicating that sec. 7 of the Bonneville Project Act does require the return of the capital investment with interest.

proportions of power and irrigation costs to be repaid from power revenues. The impact also will vary with the length of the period required to repay the interest-bearing portion of the investment at an irrigation project. Generally speaking, the shorter this period, the less the impact of an interst-rate increase. While precise results would depend upon the facts for a given project, if Grand Coulee were to be increased to a 3½-percnt rate in lieu of the present 3-percent rate, it would increase annual payout requirements probably less than 2 percent because a good deal of the repayment at Grand Coulee relates to non-interest-bearing irrigation investment.

3. PBA transmission payout requirements would be increased about 5 percent.

4. Total system increase would be about 6 to 6½ percent. Here, again, the precise result depends on relative weightings of transmission, generation, subsidy, etc., as well as on payout methods. Attention is called to the fact that this system increase is on a pro forma basis and assumes that for all the projects there would be an increase of one-half of 1 percent in the interest rate. Actually, if the rate were to be increased from 2½ to 3 percent, we presumably would not increase the rate at Grand Coulee and other irrigation projects at all because they are now on a 3-percent-payout basis. Hence, for our actual system results the increase would be less than 6 to 6½ percent indicated here for increase at this time to a rate of 3 percent. An increase from 2½ to 3½, instead of to just 3 percent, would be less than double these amounts for the same reason, namely, at the reclamation projects the increase would not be 1 percentage point but would be only one-half of 1 percent increase in the nominal rate, that is, from 3 to 3½ percent.

The pro forma results shown above must be viewed in the light of two other factors. First, pro forma results assume that a change in the interest rate is applicable from the beginning of the payout period. If, on the other hand, the increased interest rate became applicable just for the remaining years of the payout period of our existing projects and, of course, became applicable only to the actual unpaid balance, including the fact that the payout is ahead of schedule in some cases, the increase in annual payout requirements for some of the individual projects (that is, the older projects, especially those with considerable payout surplus) would be considerably less than the indicated pro forma percentages and for the total system the increase would be appreciably less than the indicated 6 to 6½ percent.

It must be noted, also, that the pro forma results assume that the increase in interest rates would be applied to all of the investment in all of the projects. If the present interest rates were retained for some of the older projects with the increased interest rates being made applicable only to new projects or to new investment at existing projects, the impact on our total system payout requirements during the next few years would be considerably less than these overall pro forma results.

Senator ANDERSON. I would like to have it because if you are in any way obligated to get what money is now costing the Federal Government, your bill would be very substantially larger, and there might be some indication that you ought to raise rates. Have you ever thought of that possibility of getting even?

Dr. PEARL. We are considering that right now. We are making a study at the present time.

Senator ANDERSON. So if you raise the rates to your users up there and sell this power at a mill and a half to Pacific Gas & Electric, you will still further increase the difficulties of your people up there, won't you?

Mr. PEARL. It depends entirely how you make the increase. If we were to increase over our whole rate structure, everybody would get the same increase.

Senator ANDERSON. No, if you have a contract with these people at a certain price.

Dr. PEARL. No, none of our contracts are written that way. We can raise the price on our power any 5-year period.

Senator ANDERSON. For 5 years you could not.

Dr. PEARL. Beginning in December of 1959 is the end of one of these 5-year periods. So any contract written today of course would be subject to a change of rates in December 1959.

Senator ANDERSON. This contract included?

Dr. PEARL. Yes.

Senator ANDERSON. Is there a specific provision in this contract that says so?

Dr. PEARL. We have a rate structure that goes along with the contract. If you would like to have a copy of it, I am sure we can furnish it. I understand it is already in the record.

Senator ANDERSON. Where is that in the contract?

Mr. GOLDHAMMER. It is one of the attachments.

Senator ANDERSON. Just give me the part of the contract.

Mr. GOLDHAMMER. It is in exhibit B.

Senator ANDERSON. If I want to make a contract with you I want to know what is in the contract and not what is in the exhibits. What is in the contract that says you have a right to raise the rent any day or move out. That is what I am getting to. If you can find a spot in the contract which says the rates are covered by some schedule, that will do it.

Mr. GOLDHAMMER. It is in section 6, payments for power delivered.

Senator ANDERSON. The long-term bonds, if we can go back to that for a minute, starting in 1965, March 15, at 0.401, 66.4, 72 to 67 is 3.90, 3.91, 3.86, 4.01, and 4 even. So that the average rate is nearer 3.90 now, and the provision that they put in the upper Colorado Basin law would mean that if a project is started in the upper Colorado storage project, we have to figure 4 percent interest on it. As you well know, Hoover Dam would not be feasible at 4 percent. Columbia Basin, not a single foot would be feasible at 4 percent. There is no project that I have heard of in the United States that could stand 3⅝. No project in the United States could stand 3⅝ interest. And here is 4. I just wonder if that does not give some clue as to what the Government might be expecting on this particular project.

Senator Engle, if you have any question, you go ahead.

Mr. MILGATE. Senator Engle, I would like to make one small amendment to what I said before. Pursuant to provisions of the authorizing act the Yakima project interest rate is actually 2.5 percent. This project does not fall in the 3 percent category generally used for reclamation projects, because of specific law which provided for 2.5 percent.

Senator ENGLE. Have you made any studies of those on the Bonneville and Pacific Gas & Electric contract?

Mr. MILGATE. No, until today we have not had a chance to look at the contract. In this proposed letter we bring out those matters which we understood from our discussions with representatives of Bonneville Power Administration. This covers our understanding of the proposed intertie, and we have generally stated in the letter that the net revenues amount to about a million dollars a year, and that the additional revenues derived from the intertie would lessen but not eliminate the impact of the higher cost projects placed in service without revision in the current rate structure.

Furthermore, we also mention in the letter that we did not explore what effect, if any, the intertie would have on the repayment ability of the Bureau of Reclamation's Central Valley project.

Senator ENGLE. Would you care to express an opinion as to the fairness of a mill and a half rate when other customers in the Bonneville area are paying 2.5 mills or 2 mills?

Mr. MILGATE. I don't feel that we are in a position to express an opinion in that regard.

Senator ENGLE. Is the Comptroller General in a position to make an analysis of this proposed contract with respect to whether or not it is good business for the Federal Government? Can you make that kind of analysis?

Mr. MILGATE. Our office is comprised of personnel who are principally accountants and lawyers. We do not have engineers, electrical or hydraulic, on our staff. To the extent that these contracts could be analyzed and could be by analogy examined by people with this particular background we would examine the contracts.

Senator ENGLE. I asked Dr. Pearl if it was not true that the Pacific Gas & Electric would be paying less for this power than customers inside of the distribution system of the Bonneville or Columbia power system. He was not able to answer that question. He said it depends on a lot of "ifs" and "ands." Do you think, from your study of the situation there, you could answer that question?

Mr. MILGATE. The answer probably would be that we would go directly to the personnel of the Bonneville Power Administration and determine from what studies they had prepared and what work we were able to do what the comparable rates would be.

Senator ENGLE. You could get the figures, could you not?

Mr. MILGATE. Yes, sir.

Senator ENGLE. That is going to be quite a little job, isn't it?

Mr. MILGATE. I believe so.

Senator ENGLE. Could you make a study which would determine the value of this Bonneville power to the Pacific Gas & Electric Co. system? In other words, what I want to find out is what this power is worth to them. My hunch is that they will bring down this mill and a half power or 2.5 mills or whatever they pay for it, and they will swap it, kilowatt for kilowatt, by taking off steam production which probably runs anywhere from 8 to 10 mills. In all probability the value to their system of this power would run, the difference between what they actually paid Dr. Pearl and maybe 8 or 10 mills—they are sitting there getting just as fast as geese on public power while Bonneville is going broke. That is my suspicion about this arrangement. It ought to be laid out on the table for the public to see, because if they are getting away with that kind of piece of highway robbery in broad daylight, the American people ought to know about it. Can you make that determination? You may recall one time I asked you to find out about the kind of contracts the Central Valley project had with the Pacific Gas & Electric Co. Do you remember those?

Mr. MILGATE. Yes, sir.

Senator ENGLE. They had their hand in the till up to their elbow on those contracts, too, as you report demonstrated. Do you think you could make this determination for us?

Mr. MILGATE. I would like for Mr. Muhonen to answer the question.

Senator ENGLE. All I want is the facts. All I want to know is No. 1, is it true that this power sold out of Bonneville to the Pacific Gas & Electric Co. will be sold for less than Bonneville's own customers are

paying; No. 2, what is the value of this power to the Pacific Gas & Electric Co. system at the load center.

Mr. MUHONEN. I believe the value of the power to their system at the load center would involve some technical considerations and availability of data which they might or might not be willing to furnish to us. So, as in the case of the Trinity review, we would probably have to rely on technical reviews made by Bureau of Reclamation or Bonneville Power Administration plus the availability of data from Pacific Gas & Electric or whatever company was involved.

Senator ENGLE. It would be an interesting fact for the record if they refused to give you the data. They are going to be on and I expect to ask them the same questions. Maybe the need for your going into this will be obviated. If not, I may ask the chairman to request that. Thank you very much, Mr. Chairman.

Senator ANDERSON. I only want to say again that I think we ought to have as much information on this as we can, and I think we would be interested in having the Bonneville people tell us what they intend to do about it. One of the oldest rules in business is when you are losing money, you better either greatly increase your volume or greatly increase your price. I know of no other way to start to get solvent. If you are running behind it would seem that you would have to have an increase in power rates, and if you even made this contract, you are still going to be short.

Dr. PEARL. There is just one fact I would like to add at this point. Bonneville is ahead on their payout requirements $76 million.

Senator ANDERSON. I understand that thoroughly. You had a great period of war. But you cannot absolutely count on a war in the next few years. It might not happen, we hope. Furthermore, if it is the kind of war I think it will be, it will not matter where you are in payments.

Dr. PEARL. We are not in the red as an overall operation. We are in the red as a 1-year operation. We are making a study of this. This sale of power we are talking about is one of the things that started out on this study to find a market for the dump power that is going into the ocean.

Senator ANDERSON. I would only say that if a certain firm had made an awful lot of money during the war and started running into a period where they started losing money, I doubt they would say don't worry about this because for 20 years we made a dickens of an amount of money.

Dr. PEARL. We are worrying about it.

Senator ANDERSON. All right. Thank you very much.

We will now hear the statement of the Federal Power Commission. Mr. Hughes, will you proceed please.

STATEMENT OF EDGAR T. HUGHES, CHIEF, DIVISION OF ELECTRIC RESOURCES AND REQUIREMENTS, BUREAU OF POWER; AND DR. J. A. JESSEL, CHIEF, TRANSMISSION AND COORDINATION SECTION, BUREAU OF POWER, FEDERAL POWER COMMISSION

Mr. HUGHES. I am E. T. Hughes, Chief of the Division of Electric Resources and Requirements in the Bureau of Power. To my right is Dr. J. A. Jessel, Chief of the Transmission and Coordination Section

in the Bureau of Power. I regret that Mr. Francis L. Adams cannot be here today. He is attending a meeting of the International Joint Commission which is dealing with the Columbia River.

We have submitted a statement to this committee and, of course, we stand on that statement. Dr. Jessel could read the concluding statement here which may be of help to the committee.

Dr. JESSEL. What I have to present is merely a summary statement of the information and comments which this committee asked the Federal Power Commission to prepare in response to certain questions. By way of background, I wish to state that staff studies have been made by the Bureau of Power of the Federal Power Commission, showing interconnection possibilities throughout the United States. They were made pursuant to section 202(a) of the Federal Power Act, which directs the Commission to promote and encourage the voluntary interconnection and coordination of electric facilities in adjacent areas for the purpose of assuring an abundant supply of electric energy throughout the Nation with the greatest possible economy and with due regard to the conservation of natural resources.

As you already have heard, two such studies were made for a proposed Oregon to California intertie, one in 1950 and the other in 1953. The latter of these studies shows that an intertie consisting of one 230,000-volt transmission circuit was economically feasible, and also that two 320-volt transmision circuits were economically feasible.

With letter of April 1, 1959, from Chairman Jerome K. Kuykendall of the Commission, there was transmitted to Senator Anderson, Chairman of the Subcommittee on Irrigation and Reclamation, information and comments in response to his request of February 25, 1959. The information supplied to the subcommittee shows that the tie would be made in several ways, depending on the amount of transmission capacity to be provided and the agencies that would construct the facilities.

An exploratory study—by that I mean a comparison of the 1953 study with up-to-date data—indicates that one 230,000-volt line to effectuate a tie is economically feasible now and that a second 230,000-volt line is sufficiently attractive to warrant serious consideration for construction concurrently. I wish to state that we have made no detailed study of this matter. This is based on the information which has been supplied to the committee and the text and in the 10 tables.

Data available to the staff indicate that surplus nonfirm power in the Pacific Northwest will be available for delivery to California for at least 10 years. Also, as the peak loads in the Pacific Northwest occur in the winter, and as they occur in California in the summer, the intertie could be used to advantage if diversity in load is taken care of by means of adequate arrangements.

In addition, the use of surplus nonfirm energy in California which would otherwise represent spill over the dams in the Pacific Northwest would result in conservation of natural resources. Also the intertie would be an important defense facility.

That concludes my statement.

Senator ENGLE. I observe that in the statement filed, entitled, "Information and Comments in Response to Request of the Subcommittee

on Irrigation and Reclamation of the Senate Committee on Interior and Insular Affairs" on page 5, item 5, it says:

> It is assumed that the California intertie would be operated on a common-carrier basis available for all use among potential users in California, specifically Pacific Gas & Electric Co., Bureau of Reclamation, Central Valley project, and others.

In making that assumption, did that have a definite bearing on your conclusions with reference to the economic feasibility of this intertie?

Mr. JESSEL. No, it did not. We made only an indication as of now. We have no up-to-date report since 1953. However, I assume, for example, that Bonneville would obtain a net of about $1½ million a year average for 10 years. The cost to Bonneville and to P.G. & E. for wheeling would be about $1.1 million. That would not require too much comparison to show it is fairly economical.

The second line is not so simple, because it would be a longer line. However, we do know from the tabulation that you have that there is a diversity of load between California and the Northwest. The figures indicate it could be of the order of 300,000 to 400,000 kilowatts. If arrangements are made to take that into account and use it—in other words, to reduce the supply by that amount or increase it considerably below that amount—there is a possibility of a further economic advantage of a second line. We indicate that as a good possibility requiring some good study.

Senator ENGLE. I notice on page 10 of this statement, also, under point No. 7, I believe, that reference is made to the cost factor which would have a bearing on the economic feasibility of the proposed intertie at the price at the Oregon-California line that would be charged for Pacific Northwest surplus nonfirm energy. For example, if the price is 2.5 mills per kilowatt-hour corresponding to a diversity price of 3.5 mills per kilowatt-hour in San Francisco, it may be only possible to sell such amounts of surplus nonfirm waterpower from the Pacific Northwest as may be backed off at the older steam and electric plants in the San Francisco area.

Tell me what you mean by that statement.

Mr. JESSEL. We have made no study, but we have some indications. We do know that the plants in California of various ages, in other words, the new plants are more efficient and cost less per kilowatt-hour to produce energy than the older plants. We also know similar to other companies throughout the country that these utilities do make minimum fuel purchase contracts which they have to pay a penalty for not taking. So what I meant there is that the amount of energy which could be usable in California would depend in part upon the price—delivered price—at the load centers. We only flag that as something to look into in detail.

Senator ENGLE. Do you have an estimate of what that costs to generate steam electric energy?

Dr. JESSEL. I don't want to give the impression of hesitating to your question. It is a matter of definition. If your question means what it would cost at the steam plants which will be backed off to utilize this energy, it could vary from 4.395 to about 5.2, in that range. The newer plants could get down to 3.9 mills per kilowatt-hour. That is based on the fuel cost plus incremental operation and maintenance. In making that statement I wish to point out that in my consideration,

assuming only the line now, that there would be need in San Francisco to spin steam capacity equivalent to the amount of capacity being delivered from Oregon. So in the event of any line disturbance the load is carried automatically from the spinning unit.

Senator ENGLE. I am not sure that I understand it yet. Do you have any other comment to make?

Mr. HUGHES. The Commission is very much interested in the national aspects of a line like this. We cannot order the building of a line during peacetime. During wartime we have that legal possibility. We are spending many millions now for defense. With the advent of this atomic bomb a line built at that time may be a very good thing. Perhaps it could be charged off to national defense. While it is awful hard to justify economically some of these interconnections which we study, and maybe we come up with a good answer which is contrary to ours, but when it comes to a real showdown in defense, I think we need such lines as this, and they should be built. It could be that the bomb may drop in the Northwest. You may need help from California. But of course the bomb could drop in California, and you may need help from the Northwest. I think that particular item should be taken into consideration in such a discussion as this.

Senator ENGLE. Thank you very much.

Senator ANDERSON. We will insert the Federal Power Commission statement in the record at this point.

(The statement referred to follows:)

PROPOSED BONNEVILLE-CALIFORNIA INTERTIE

Information and comments in response to request of the Subcommittee on Irrigation and Reclamation of the Senate Committee on Interior and Insular Affairs

This statement has been prepared by the Bureau of Power of the Federal Power Commission in response to a request by letter dated February 25, 1959, from Senator Clinton P. Anderson, chairman, Subcommittee on Irrigation and Reclamation to Jerome K. Kuykendall, Chairman, Federal Power Commission. The information desired was outlined in a memorandum attached to the letter from Senator Anderson, which detailed in eight numbered paragraphs the material to be supplied by the Commission. The responses are numbered in the same order as the items in the memorandum from the subcommittee.

1. The power regions which would be involved in the proposed Bonneville-California intertie are the Oregon-Washington area served by the "West Group" of the Pacific Northwest Power Pool and the northern and central California area which is designated by the Federal Power Commission as Power Supply Area 46. The electric systems included in each of these two power regions are named in attached tables 1, 2, and 3.

2. The load and resources data for the Pacific Northwest power area served by the West Group of the Pacific Northwest Power Pool and for the northern and central California power area served by the electric systems operating in Power Supply Area 46 are given in tables 1 through 9. Some of these data show load and resource diversity and include factors pertinent to the usefulness of the proposed interconnections.

3. Under present-day technology, the voltage level of the proposed California intertie could be either 230,000 volts, 345,000 volts, or 460,000 volts. Utilities in the United States have had considerable experience in operating transmission lines at 230,000 volts and 345,000 volts; and tests made on experimental lines indicate that lines and equipment to operate at 460,000 volts could be designed today and supplied by the electrical manufacturers. From the standpoint of engineering, 230,000-volt transmission is fairly standard. Transmission at 345,000 volts has disclosed a minor problem; namely, somewhat more flashovers due to lightning than to be expected from the designs. This matter

relates to the design of steel towers, particularly with respect to height and proportions. Available data indicate that transmission line operations at 380,000 volts in Sweden and France present no problems. For transmission at 460,000 volts and higher, duplex conductors, that is two conductors per phase separated at an appropriate distance, is the best practical way to overcome problems of corona. Some work has yet to be done on improving the spacers for the duplex conductors but no serious problems are indicated. The use of duplex conductors for 345,000-volt transmission is advantageous as it results in larger carrying capacity compared to single conductors per phase and in improved conditions in regard to corona.

With respect to the Bonneville-California intertie, the matter of whether 230,000 volts, 345,000 volts, or 460,000 volts should be used for transmission depends on the amount of power to be delivered and the most economic way of accomplishing such delivery. For a particular length of transmission line, the maximum amount of electric power that could be delivered varies about as the square of the voltage, as shown on table No. 10 attached hereto. The cost of construction of transmission lines is larger for the higher voltage transmission lines than for the lower voltage lines. For example, a 230,000-volt transmission line with large conductors supported on steel towers may have a construction cost per mile of about $48,000, whereas a proportionally comparable 345,000-volt transmission line may have a construction cost of about $72,000 per mile, and a 460,000-volt line about $95,000 per mile. Moreover, terminal facilities have an even higher relative cost with respect to voltage. The capital cost of a 230,000-volt oil circuit breaker is about $130,000 in place for equipment, installation, and overhead costs, while for a 345,000-volt oil circuit breaker it is about $240,000, and for a 460,000-volt oil circuit breaker about $350,000. Similarly, the estimated cost of a three-phase 300,000-kilovolt-ampere transformer in place is $785,000 for a 230,000-volt installation, $1,200,000 for a 345,000-volt installation, and $1,750,000 for a 460,000-volt installation. Other terminal facilities have relative costs of the same general proportions.

With the construction of one 230,000-volt circuit to effectuate the California intertie, it would be possible to transfer about 120,000 additional kilowatts in either direction during on-peak hours and about 160,000 kilowatts during off-peak hours. With the construction of two 230,000-volt circuits to effectuate the intertie, it would be possible to deliver about 270,000 additional kilowatts to California during on-peak hours and about 320,000 kilowatts during off-peak hours; and from California to Oregon about 250,000 kilowatts during on-peak hours and 300,000 kilowatts during off-peak hours. With the construction of one 230,000-volt line and one 345,000-volt line to constitute the intertie, it would be possible to transfer about 450,000 additional kilowatts of capacity in either direction during on-peak hours and about 500,000 kilowatts during off-peak hours.

At the present time, there is a 230,000-volt transmission line from Big Eddy substation near The Dalles, Oreg., to Klamath Falls via Bend, Oreg., which could be used to deliver surplus nonfirm power to California. This line was extended from Klamath Falls to Medford, Oreg., for operation at 230,000 volts. There are several ways in which one 230,000-volt line may be constructed for the California intertie. These include a 90-mile line from Klamath Falls to Pit No. 3 plant of Pacific Gas & Electric Co., or a 120-mile line from Klamath Falls to Shasta plant in California, or a 145-mile line from Klamath Falls to the Cottonwood substation of Pacific Gas & Electric Co. If the line should originate on the 230,000-volt circuit from Klamath Falls to Medford, such line length could be reduced almost 10 miles. If a second 230,000-volt line is to be constructed as part of the California intertie, it would probably extend from Reston, a point on Bonneville's 230,000-volt line near Roseburg, Oreg., to Cottonwood substation, a distance of about 245 miles. To complete this line would require the construction of about 90 miles of new line in California and about 65 miles of new line in Oregon if arrangements are made to utilize the 230,000-volt line facilities of California-Oregon Power Co. There are at present no 345,000-volt lines in Oregon. If such a line is constructed, it would probably extend either from The Dalles or the John Day plant on the Columbia River via Salem and Eugene, Oreg., to Cottonwood substation in California, a transmission distance of almost 500 miles. About 200 miles of such 345,000-volt line would be usable on a long-term basis as part of the transmission system of the Bonneville Power Administration.

4. Answers to questions of alternative routings, approaches to the interconnection idea, and timing or scheduling of interconnection facilities will depend on policy, judgment and economic as well as engineering consideration. Early construction of one 90-mile 230,000-volt line is desirable, and simultaneous construction of a second 230,000-volt line appears to be sufficiently attractive to warrant serious consideration. Routings would depend in large measure on the parties that would construct the transmission facilities. The timing or scheduling of a 3,450,000-volt transmission line could be fixed upon a showing as to when there would be sufficient benefits to warrant such construction, and this would be based on an extensive and comprehensive study such as the one made by the Bureau of Power under date of March 1953. Time did not permit the making of another such detailed study.

5. If it is assumed that the California intertie would be operated on a common carrier basis, available for all to use, among the potential users in California could be Pacific Gas & Electric Company, U.S. Bureau of Reclamation-Central Valley project, Sacramento Municipal Utility District, the State of California (for its water plan), and perhaps others that could be reached through wheeling arrangements. In Oregon and Washington, the potential users could be Bonneville Power Administration; California-Oregon Power Co.; city of Eugene, Oreg., water and electric board; Portland General Electric Company; Pacific Power & Light Co.; and, through wheeling arrangements, the Washington Water Power Co., Seattle City Light, Tacoma City Light, and perhaps others. A study as to whether or not the pumping requirements of the California water plan might provide a significant market for summer power now surplus in the Pacific Northwest has not been made due to lack of information. This could be developed in a comprehensive report of the type mentioned in item 4 above.

6. Regarding the availability of nonfirm surplus power for transmission over the California intertie, it is sound economics to transmit only such power as is not usable in the region of origin. Estimates of the amounts of nonfirm power to be available for transmission over the intertie can be made with reasonable accuracy from the proposed construction programs. Until such time as a large amount of reservoir storage is provided in the Columbia River Basin within the United States and Canada, and substantial amounts of fuel-electric generating capacity are constructed in the Pacific Northwest, there will be a surplus of nonfirm power in the Pacific Northwest. It would seem that the number of years during which substantial quantities of nonfirm surplus power would be available in the Pacific Northwest for delivery to California would be a significant factor in the considerations of amount of transmission line capacity to be provided for the California intertie. Practical ground rules might include a policy providing that nonfirm surplus power would first be available to the region of origin before committing it to another region; that the amount of nonfirm surplus power to be made available to another region be specified; and that the number of years of availability be determined in advance so as to assure that investment for intertie purposes would be made on an economical basis.

7. With respect to economic feasibility of the proposed California intertie, only general indications can be given at this time, because within the few weeks since receipt of the request from the subcommittee, the staff of the Commission could not make the required extensive and comprehensive investigation or study to arrive at a precise economic appraisal. As indicated by table 1 attached hereto, the Pacific Northwest will have substantial amounts of surplus nonfirm hydroelectric energy available for transmission to California during about 8 or 9 months of a median water year and for at least 3 months of an adverse water year. Preliminary indications are that such surpluses will be available for at least 10 to 15 years. If a relatively large amount of reservoir storage capacity is constructed in the Columbia River Basin within the next 10 years, it appears that the magnitudes rather than the yearly durations of the indicated surpluses would be reduced. This leads to the tentative conclusion that there will be sufficient surplus energy in the Pacific Northwest to load one 230,000-volt intertie circuit to full load for a large percentage of the time. Also, there would be available enough surplus nonfirm hydro energy to load to almost a like percentage of the time a second 230,000-volt intertie circuit if a sufficient amount of steam-electric energy can be backed off economically in California. At the present time fuel prices in the northern and central California area are about 36.6 cents per million B.t.u. for bunker fuel oil and 32.7 cents per million B.t.u. for natural gas.

In the Pacific Northwest, the maximum monthly peak loads occur during the winter season of November, December, January, and February, and the seasonal peak load usually is expected in January. On the other hand, the monthly peak loads in northern and central California normally occur during the months of June, July, and August and the annual peak load usually occurs in August, as shown on table 4 attached hereto. From the available load data and estimates (see table 5) it is clear that there was a diversity in annual peak loads between the Pacific Northwest and northern and central California of at least 100,000 kilowatts in recent years, and with the increased pumping loads in California future diversity in annual peak loads may be of the order of 300,000 to 400,000 kilowatts. Available data indicate that about 100,000 to 150,000 kilowatts of such diversity of loads in California could be compensated for by power resource diversity in California leaving about 200,000 to 250,000 kilowatts of diversity which could become a salable power resource if appropriate arrangements are made for seasonal exchanges of power between the Pacific Northwest and northern and central California. Assuming an average value for capacity of $20 per kilowatt per year, the capacity diversity of 200,000 to 250,000 kilowatts would have an annual dollar value of $4 million to $5 million. Stated in another way, this diversity of 200,000 to 250,000 kilowatts if converted to salable power could result in a saving for powerplant investment in the order of $32 million to $40 million.

With respect to reserves, the Pacific Northwest is carrying practically all of its reserves in excess hydrowheel capacity and in reservoir storage. In northern and central California the reserves are about 8 percent. There is no percent basis for assuming that system reserves could be reduced substantially if the California intertie is made. However, in event of serious equipment breakdown in either power region, the California intertie would be of considerable value during the times of breakdown.

The year of most adverse streamflow in northern and central California is 1931, whereas it is 1936–37 in the Pacific Northwest. Although 1931 is a low-water year for the Pacific Northwest, it is a better water year than 1936–37. This indicates that there is also a power resource diversity, attributable to run-off characteristics, between northern and central California and the Pacific Northwest. Determination of the amount of diversity would require a detailed regulated streamflow and power operational study.

In regard to costs, there has not been sufficient time to prepare a detailed up-to-date estimate but rough approximations indicate that the capital cost, consisting of construction cost plus interest during construction, would be about $5,100,000 if one 90-mile 230,000-volt line is provided from Klamath Falls, Oreg., to Pit No. 3 plant in California; and, about $11,800,000 for a 245-mile 230,000-volt line from near Roseburg, Oreg., to Cottonwood substation in California. Part of the latter investment would not be necessary if the existing 230,000-volt facilities of California-Oregon Power Co. are utilized. If a 345,000-volt line were constructed from the vicinity of The Dalles, Oreg., to Cottonwood substation in California, the capital cost would be approximately $40 million, and if this line is designed for later operation at 460,000 volts, the capital cost would be in the order of $50 million.

The annual costs of the transmission facilities would depend upon the electric utilities or agency which would do the construction and make the investment. For example, if the 90-mile line from Klamath Falls, Oreg., to Pit No. 3 hydroplant in California were constructed as a Federal facility, the annual cost would be about $275,000. Should the investment be made solely by private utilities, the annual cost would be about $660,000 if taxes are included. If the transmission line is to be amortized in say 20 to 25 years, then the annual costs would be in the order of $340,000 and $780,000, respectively.

Another cost factor which would have a bearing on the economic feasibility of the proposed intertie is the price at the Oregon-California State line that would be charged for Pacific Northwest surplus nonfirm energy. For example, if the price is 2.5 mills per kilowatt-hour, corresponding to a delivered price of about 3.5 mills per kilowatt-hour in San Francisco, it may be possible to sell only such amounts of surplus nonfirm waterpower from the Pacific Northwest as may be backed off at the older steam-electric plants in the San Francisco Bay area. If the price at the Oregon-California line is 2 mills per kilowatt-hour, apparently more surplus energy from the Pacific Northwest would be usable in California. However, a point would soon be reached at which a minimum price at the Oregon-California line would be required to cover investments and costs in Oregon.

There may be other cost and benefit factors which would be considered in examining the economic feasibility of the proposed interconnection between Oregon and California. In any event, as indicated herein, an extensive and comprehensive study would establish the costs and benefits relating to the economic feasibility of the proposed intertie.

8. In addition to the benefits discussed above, the proposed intertie would be of great value to the national defense. Studies made by the Office of Civil and Defense Mobilization, in which the staff of the Federal Power Commission participated, show conclusively that interconnections between power supply areas and regions of the type being considered between Oregon and California are very important to national defense. It is also evident that economic use of surplus nonfirm waterpower results in fuel conservation.

TABLE 1.—*Estimate of amounts*[1] *of surplus hydro energy on West Group systems*[2] *of Pacific Northwest Power Pool under adverse water and median water conditions—Energy figures are in average megawatts*[3]

Item	1959–60	1960–61	1961–62	1962–63	1963–64	1964–65	1965–66	1966–67	1967–68
Adverse water year 1936–37:									
July	672	1,377	1,214	1,986	1,761	1,650	1,245	1,247	1,701
August	262	448	339	754	325	188		35	
September				501	177				
October									
November									
December									
January									
February									
March									
April			34						
May	1,485	1,132	1,783	1,722	1,537	972	1,155	1,466	1,150
June	2,143	1,960	2,926	2,856	2,675	2,135	2,476	2,775	2,436
Total megawatt-months	4,562	4,917	6,296	7,819	6,475	4,945	4,876	5,523	5,287
Median water hydro:									
July	1,001	1,902	1,872	2,771	2,544	2,355	2,074	2,270	2,627
August	617	1,027	927	1,497	1,133	996	673	901	730
September	193		66	2,325	547	307	38	142	
October	45	102	193	343	28				
November	235	137	500	792	421	41		25	
December	315	191	570	897	522	138	88	126	
January	666	597	1,133	1,231	880	545	509	619	158
February	625	557	1,037	1,133	780	351	311	421	
March	679	602	1,070	1,165	821	378	335	442	
April	1,289	1,398	2,160	2,223	1,806	1,528	1,613	1,898	1,526
May	2,198	2,148	3,019	3,104	2,742	2,478	2,600	2,884	2,555
June	2,092	1,942	2,951	2,852	2,596	2,352	2,612	2,911	2,548
Total megawatt-months	9,955	10,603	15,498	20,333	14,820	11,469	10,863	12,639	10,144

[1] Based on Pacific Northwest Utilities Conference Committee, "West Group Forecast of Power Loads and Resources, July 1958–June 1969," dated Jan. 3, 1958, revised Jan. 20, 1958.

[2] Comprised of: Eugene Water and Electric Board, Oregon; city of Milton-Freewater, Oreg.; city of McMinnville, Oreg.; Bonneville Power Administration; Portland General Electric Co.; Pacific Power & Light Co.; Cowlitz County Public Utility District, Washington; Grays Harbor Public Utility District, Washington; city of Centralia, Washington; Tacoma City Light, Washington; Seattle City Light, Washington; Puget Sound Power & Light Co.; Chelan County Public Utility District, Washington; Okanogan County Public Utility District, Washington; Pend Oreille County Public Utility District, Washington; village of Bonners Ferry, Idaho; and the Washington Water Power Co.

[3] To obtain energy in kilowatt-hours for any month, multiply the figure shown by 1,000 and then by the number of hours in the month.

TABLE 2.—*Actual and estimated loads for the West Group systems[1] of the Pacific Northwest Power Pool*

Calendar year	Annual energy (million kilowatt-hour)	Annual peak load (megawatts)	Annual load factor (percent)
Actual:			
1945	13,034	2,139	69.6
1950	22,795	3,928	66.2
1955	37,348	6,645	64.2
Estimated:			
1960	53,700	9,200	66.6
1965	68,200	11,800	66.1
1970	86,600	14,700	67.3
1975	106,000	18,000	67.3
1980	126,800	21,500	67.3

[1] Comprised of Eugene Water and Electric Board, Oreg.; city of Milton-Freewater, Oreg.; city of McMinnville, Oreg.; Bonneville Power Administration; Portland General Electric Co.; Pacific Power & Light Co.; Cowlitz County Public Utility District, Wash.; Grays Harbor Public Utility District, Wash.; city of Centralia, Wash.; Tacoma City Light, Washington; Seattle City Light, Washington; Puget Sound Power & Light Co.; Chelan County Public Utility District, Wash.; Okanogan County Public Utility District, Wash.; Pend Oreille County Public Utility District, Wash.; village of Bonners Ferry, Idaho; and the Washington Water Power Co.

TABLE 3.—*Actual and estimated loads for the northern and central California power area,[1] Power Supply Area 46*[1]

Calendar year	Annual energy (million kilowatt-hours)	Annual peak load (megawatts)	Annual load factor (percent)
Actual:			
1945	9,800	1,710	65.4
1950	14,000	2,510	63.7
1955	20,800	3,760	63.1
Estimated:			
1960	29,800	5,400	62.8
1965	41,100	7,450	63.0
1970	53,700	9,720	63.1
1975	69,200	12,500	63.2
1980	87,000	15,800	62.9

[1] The principal electric systems serving this area are: Pacific Gas & Electric Co.; U.S. Bureau of Reclamation, Central Valley project; Sierra Pacific Power Co.; Sacramento Municipal Utility District; and Turlock and Modesto Irrigation Districts. The above figures include data for the small systems which also supply electric service in the area.

TABLE 4.—*Estimates of monthly peak load diversity based on actual and estimated loads [1] for electric system groups operating in the northern and central California areas,[2] and those in Oregon and Washington comprising the West Group [3] of the power pool*

[Peak loads in megawatts]

Year	Item	January	February	March	April	May	June	July	August	September	October	November	December	Annual
1945	Power Supply Area 46	1,543	1,512	1,516	1,531	1,557	1,601	1,703	1,673	1,595	1,577	1,566	1,583	1,703
	West Group of power pool	2,139	2,096	2,102	2,056	2,021	1,973	1,993	1,983	1,960	1,897	1,934	1,942	2,139
	Total	3,682	3,608	3,618	3,587	3,578	3,574	3,696	3,656	3,555	3,474	3,500	3,525	3,842
1950	Power Supply Area 46	2,190	2,070	2,254	2,116	2,289	2,401	2,503	2,428	2,433	2,357	2,350	2,414	2,503
	West Group of power pool	3,787	3,702	3,425	3,332	3,345	3,280	3,242	3,303	3,510	2,473	3,913	3,928	3,928
	Total	5,977	5,772	5,679	5,448	5,634	5,681	5,745	5,731	5,943	4,830	6,263	6,342	6,431
1955	Power Supply Area 46	3,143	3,019	3,202	3,266	3,232	3,472	3,610	3,746	3,661	3,407	3,503	3,411	3,746
	West Group of power pool	5,692	5,526	5,442	5,301	5,161	5,340	5,063	5,179	5,503	5,864	6,645	6,507	6,645
	Total	8,835	8,545	8,644	8,567	8,393	8,812	8,673	8,925	9,164	9,271	10,148	9,918	10,391
1956	Power Supply Area 46	3,349	3,404	3,425	3,513	3,418	3,942	3,966	3,975	3,653	3,702	3,732	3,839	3,975
	West Group of power pool	6,567	6,630	6,230	5,891	5,640	5,722	5,562	5,602	5,772	6,390	6,698	6,878	6,878
	Total	9,916	10,034	9,655	9,404	9,058	9,664	9,528	9,577	9,425	10,092	10,430	10,717	10,853
1957	Power Supply Area 46	3,823	3,906	3,715	3,823	3,697	4,202	4,267	4,293	3,925	3,837	3,909	4,072	4,293
	West Group of power pool	7,124	6,373	6,174	6,296	6,216	6,261	6,006	6,119	5,916	6,508	6,868	6,827	7,124
	Total	10,947	10,279	9,889	10,119	9,913	10,463	10,273	10,412	9,841	10,345	10,767	10,899	11,417
1958	Power Supply Area 46	4,025	3,812	3,670	3,595	3,909	4,120	4,332	4,350	4,135	4,165	4,227	4,263	4,350
	West Group of power pool	6,829	6,479	6,477	6,027	5,750	5,553	5,538	5,649	6,110	6,467	7,059	7,047	7,059
	Total	10,854	10,291	10,156	9,622	9,659	9,673	9,870	9,999	10,245	10,632	11,286	11,310	11,409
1959	Power Supply Area 46	4,272	4,236	4,132	4,191	4,132	4,609	4,768	4,807	4,477	4,335	4,352	4,460	4,807
	West Group of power pool	7,483	7,510	7,448	7,430	7,317	7,185	7,048	7,200	7,432	7,930	8,471	8,663	8,663
	Total	11,755	11,746	11,580	11,621	11,449	11,794	11,816	12,007	11,909	12,265	12,823	13,123	13,470
1960	Power Supply Area 46	4,481	4,433	4,398	4,478	4,430	4,923	5,081	5,115	4,721	4,624	4,649	4,720	5,115
	West Group of power pool	8,822	8,506	8,172	7,936	7,700	7,549	7,460	7,613	7,858	8,376	8,976	9,191	9,191
	Total	13,303	12,939	12,570	12,414	12,130	12,472	12,541	12,728	12,579	13,000	13,625	13,911	14,306

See footnotes at end of table.

TABLE 4.—*Estimates of monthly peak load diversity based on actual and estimated loads*[1] *for electric system groups operating in the northern and central California areas*[2] *and those in Oregon and Washington comprising the West Group*[3] *of the power pool*—Con.

[Peak loads in megawatts]

Year	Item	January	February	March	April	May	June	July	August	September	October	November	December	Annual
1961	Power Supply Area 46	4,721	4,670	4,654	4,715	4,678	5,218	5,397	5,435	5,004	4,889	4,922	5,022	5,435
	West Group of power pool	9,343	9,003	8,650	8,387	8,128	7,965	7,849	8,014	8,272	8,827	9,464	9,701	9,701
	Total	14,064	13,673	13,304	13,102	12,806	13,183	13,246	13,449	13,276	13,716	14,386	14,723	15,136
1962	Power Supply Area 46	5,011	4,972	4,948	5,007	4,979	5,539	5,723	5,767	5,308	5,172	5,245	5,321	5,767
	West Group of power pool	9,850	9,489	9,103	8,819	8,534	8,364	8,264	8,452	8,741	9,325	10,023	10,265	10,265
	Total	14,861	14,461	14,051	13,826	13,513	13,903	13,987	14,219	14,049	14,497	15,268	15,586	16,032

[1] Data for years 1945 through 1958 are based on actual loads; data for 1959 through 1962 are estimated.

[2] This area is also designated as Power Supply Area 46; the principal systems operating therein are listed on table 3.

[3] The principal electric systems comprising the West Group of the Pacific Northwest Power Pool are listed on table 1 and also on table 2.

TABLE 5.—*Estimates of diversity in annual peak loads between the system group operating in northern and central California and the West Group of the Pacific Northwest Power Pool operating in Oregon and Washington*

Calendar year	Annual peak load (megawatts)			Diversified peak load (megawatts)	Annual diversity (megawatts)
	Power supply area 46 [1]	West group of power pool [1]	Total for both groups		
1945	1,703	2,139	3,842	3,696	146
1950	2,503	3,928	6,431	6,342	89
1955	3,746	6,645	10,391	10,148	243
1956	3,975	6,878	10,853	10,717	136
1957	4,293	7,124	11,417	10,947	470
1958	4,350	7,059	11,409	11,310	99
1959	4,807	8,663	13,470	13,123	347
1960	5,115	9,191	14,306	13,911	395
1961	5,435	9,701	15,136	14,723	413
1962	5,767	10,265	16,032	15,586	446
OPERATING YEAR, JULY TO JUNE [2]					
1955–56	3,942	6,645	10,587	10,148	439
1956–57	4,202	7,124	11,326	10,947	379
1957–58	4,293	6,858	11,151	10,899	252
1958–59	4,609	7,530	12,139	11,794	345
1959–60	4,923	8,822	13,745	13,303	442
1960–61	5,218	9,343	14,561	14,064	497
1961–62	5,539	9,850	15,389	14,861	528
OPERATING YEAR, JUNE TO MAY [3]					
1955–56	3,746	6,645	10,391	10,148	243
1956–57	3,975	7,124	11,099	10,947	152
1957–58	4,293	6,858	11,151	10,899	252
1958–59	4,350	7,510	11,860	11,755	105
1959–60	4,807	8,822	13,629	13,303	326
1960–61	5,115	9,343	14,458	14,064	394
1961–62	5,435	9,850	15,285	14,861	424

[1] Electric systems are identified on tables Nos. 1, 2 and 3.
[2] Operating year of west group of Pacific Northwest power pool.
[3] Operating year which includes peak loads of both groups in the same load cycle.

TABLE No. 6.—*Sources of power supply by principal types in northern and central California and in Oregon and Washington*

[Capacity figures in megawatts]

Item	Calendar years							
	1955	1956	1957	1958	1959	1960	1961	1962
Power supply area 46: [1]								
Installed generating capacity:								
Fuel	2,624	2,839	2,844	3,052	3,052	3,365	3,665	3,725
Hydro	2,028	2,028	2,028	2,617	2,617	2,757	2,757	2,818
Total	4,652	4,867	4,872	5,669	5,669	6,122	6,422	6,543
Dependable capacity:								
Fuel	2,715	2,915	2,920	3,124	3,124	3,441	3,746	3,806
Hydro	1,926	1,915	1,915	2,472	2,472	2,612	2,612	2,673
Total	4,641	4,830	4,835	5,596	5,596	6,053	6,358	6,479
Net firm purchases	−178	−55	−45	17	17	17	17	17
Dependable capacity plus net firm purchases	4,463	4,775	4,790	5,613	5,613	6,070	6,375	6,496
Net assured capacity	4,010	4,326	4,340	5,168	5,168	5,423	5,728	5,849
West group of power pool: [2]								
Installed generating capacity:								
Fuel	427	426	443	443	443	443	443	443
Hydro	6,006	6,421	7,152	7,924	8,595	10,087	10,412	11,504
Total	6,433	6,847	7,595	8,367	9,038	10,530	10,855	11,947
Dependable capacity:								
Fuel	454	454	471	471	471	471	471	471
Hydro	5,782	5,992	6,463	6,887	7,490	8,669	8,994	9,725
Total	6,236	6,446	6,934	7,358	7,961	9,140	9,465	10,193
Net firm purchases	117	149	61	68	109	109	109	109
Dependable capacity plus net firm purchases	6,353	6,595	6,995	7,426	8,070	9,249	9,574	10,302
Net assured capacity	6,330	6,570	6,970	7,401	8,050	9,220	9,550	10,270

[1] Northern and central California area.
[2] Oregon and Washington area.

TABLE No. 7.—*Relation of power supplies to annual peak loads* [1]

[Figures in megawatts]

Calendar year	Power supply area 46			West group of power pool		
	Annual peak load	Net assured capacity [2]	Capacity margin	Annual peak load [3]	Net assured capacity [2]	Capacity margin [3]
1955	3,746	4,010	264	6,645	6,330	−315
1956	3,975	4,326	351	6,878	6,570	−308
1957	4,293	4,340	47	7,124	6,970	−154
1958	4,350	5,168	818	7,059	7,401	342
1959	4,807	5,168	361	[4] 8,663 (8,100)	8,050	[4] −613 (−50)
1960	5,115	5,423	308	[4] 9,191 (8,970)	9,220	[4] 29 (250)
1961	5,435	5,728	293	[4] 9,701 (9,540)	9,550	[4] −151 (10)
1962	5,767	5,849	82	[4] 10,265 (10,150)	10,270	[4] 5 (120)

[1] Figures for 1955 to 1958 based on reported loads; figures for 1959 to 1962 based on reported estimates.
[2] Power supply based on most adverse stream flow conditions.
[3] Includes interruptible loads and is based on load estimates included in Pacific Northwest Conference Committee west group forecast of power loads and resources, July 1958 to June 1969, dated Jan. 3, 1958, revised Jan. 20, 1958.
[4] Based on most recent estimates filed on FPC Form No. 12-E.
[5] During the peak load season the annual peak load occurs during January of the following year as shown on table No. 4 for the west group of the power pool.

TABLE No. 8.—*Comparison of characteristics of hydroelectric power supply in northern and central California with those of hydroelectric power supply in Oregon and Washington*

POWER SUPPLY AREA 46[1]

[Data as of Dec. 31, 1957][2]

Month	Hydroelectric energy		Dependable capacity, megawatts	Machine capability, megawatts
	Million kilowatt-hours	Average megawatts		
January	630	847	2,007	2,106
February	565	841	2,018	2,116
March	679	913	2,043	2,136
April	685	951	2,086	2,161
May	893	1,200	2,092	2,154
June	863	1,199	2,064	2,110
July	929	1,249	2,032	2,070
August	887	1,192	1,979	2,034
September	673	935	1,901	1,976
October	601	808	1,859	1,911
November	527	732	1,876	1,918
December	645	867	1,877	1,930
Annual	8,577	979	1,979	2,034
	Average or median flow conditions			
January	891	1,198	2,107	2,175
February	779	1,159	2,114	2,191
March	846	1,137	2,106	2,188
April	1,269	1,762	2,183	2,213
May	1,241	1,668	2,201	2,243
June	987	1,371	2,178	2,242
July	1,133	1,523	2,169	2,220
August	1,059	1,423	2,146	2,183
September	882	1,225	2,109	2,148
October	1,130	1,519	2,052	2,130
November	740	1,028	2,066	2,129
December	693	931	2,047	2,116
Annual	11,650	1,330	2,146	2,183

See footnotes, p 146.

TABLE NO. 8.—*Comparison of characteristics of hydroelectric power supply in northern and central California with those of hydroelectric power supply in Oregon and Washington*—Continued

WEST GROUP OF PACIFIC NORTHWEST POWER POOL [2]

Month	Hydroelectric energy		Dependable capacity, megawatts	Machine capability, megawatts
	Million kilowatt-hours	Average megawatts		
January	3,429	4,609	6,318	7,400
February	3,055	4,546	5,894	7,064
March	3,462	4,653	5,826	6,683
April	3,410	4,736	5,832	6,494
May	4,412	5,930	6,865	7,100
June	4,546	6,314	7,074	7,281
July	4,321	5,808	6,859	7,332
August	3,995	5,370	6,807	7,669
September	3,406	4,731	5,906	7,845
October	3,352	4,505	6,130	7,852
November	3,243	4,504	6,201	7,732
December	3,444	4,629	6,225	7,707
Annual	44,075	5,301	6,225	7,707
	Average or median flow conditions			
January	4,282	5,755	7,318	7,579
February	3,792	5,643	6,933	7,375
March	4,195	5,638	6,897	7,059
April	4,252	5,906	7,081	7,135
May	4,737	6,367	7,637	7,447
June	4,373	6,074	6,969	7,135
July	4,428	5,952	6,837	7,224
August	4,171	5,606	6,921	7,662
September	3,603	5,004	6,261	7,839
October	3,808	5,118	6,676	7,845
November	3,834	5,325	6,908	7,790
December	3,923	5,273	6,864	7,761
Annual	49,398	5,639	6,864	7,761

[1] Northern and Central California.
[2] Oregon and Washington.
[3] Most recent year for which comprehensive data have been reported to F.P.C.

TABLE NO. 9.—*Monthly distribution of annual energy loads of northern and central California and of Oregon and Washington and percentages thereof*

[Energy in million kilowatt-hours]

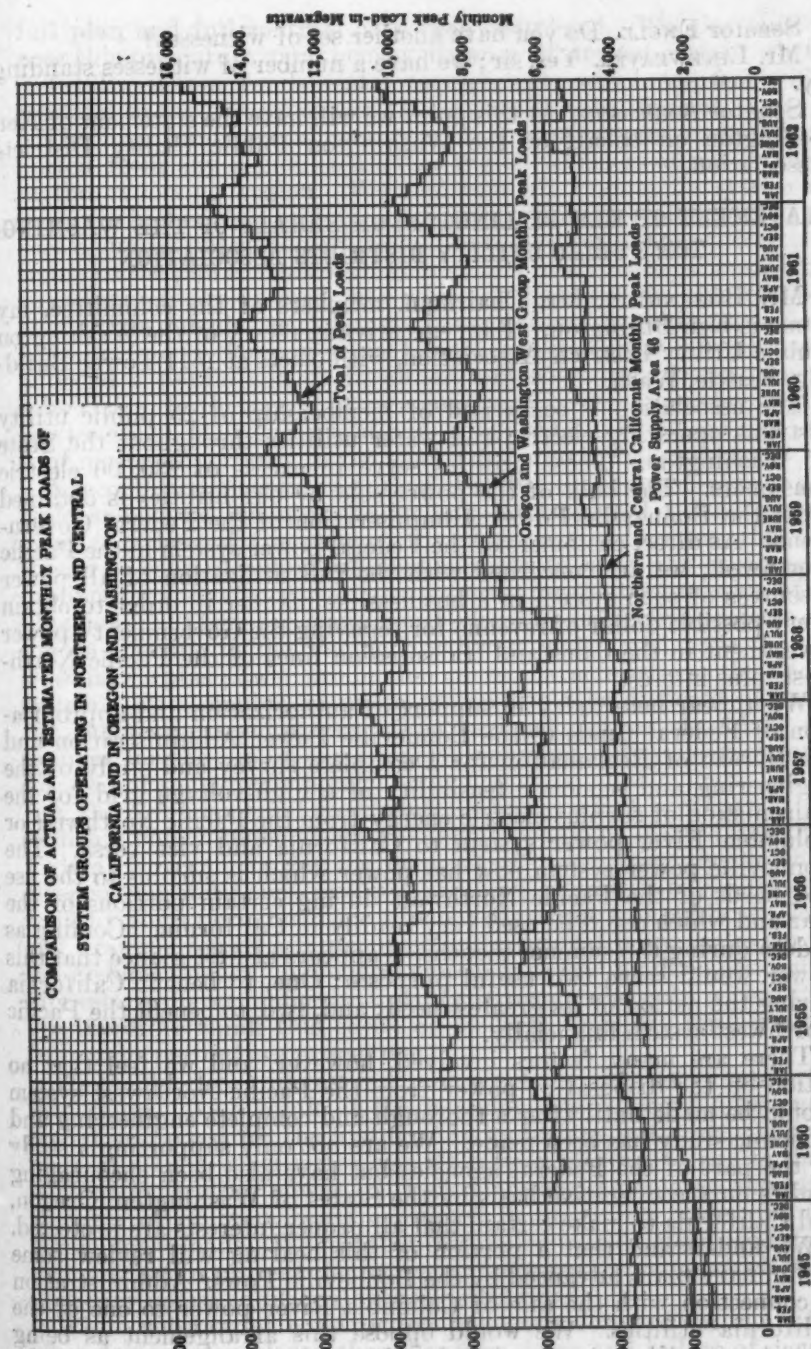
Year		January	February	March	April	May	June	July	August	September	October	November	December	Annual
	Power Supply Area 46: [1]													
1945	Net energy for load	814	720	796	790	874	853	923	906	810	788	728	760	9,762
	Percent of annual net energy	8.34	7.37	8.15	8.09	8.95	8.74	9.46	9.28	8.30	8.07	7.46	7.79	100.00
1950	Net energy for load	1,054	918	1,118	1,059	1,172	1,231	1,360	1,387	1,199	1,179	1,099	1,172	13,948
	Percent of annual net energy	7.56	6.57	8.02	7.59	8.40	8.82	9.75	9.94	8.60	8.46	7.88	8.41	100.00
1955	Net energy for load	1,544	1,393	1,678	1,689	1,648	1,862	1,985	2,080	1,812	1,733	1,629	1,674	20,727
	Percent of annual net energy	7.44	6.72	8.10	8.15	7.96	8.98	9.58	10.03	8.74	8.36	7.86	8.08	100.00
1956	Net energy for load	1,897	1,622	1,828	1,721	1,768	1,951	2,119	2,130	1,861	1,866	1,750	1,831	22,144
	Percent of annual net energy	7.66	7.33	8.26	7.77	7.99	8.81	9.57	9.62	8.41	8.42	7.90	8.26	100.00
1957	Net energy for load	1,914	1,708	1,925	1,892	1,941	2,131	2,325	2,292	1,975	1,932	1,830	1,954	23,819
	Percent of annual net energy	8.04	7.17	8.08	7.94	8.15	8.95	9.76	9.63	8.29	8.11	7.68	8.20	100.00
1958	Net Energy for load	1,994	1,747	1,873	1,762	2,028	2,146	2,351	2,387	2,026	2,102	1,948	2,065	24,429
	Percent of annual net energy	8.16	7.15	7.67	7.21	8.30	8.78	9.63	9.78	8.29	8.61	7.97	8.45	100.00
	West group of power pool: [2]													
1945	Net energy for load	1,212	1,086	1,231	1,166	1,153	1,084	1,114	1,120	952	974	960	982	13,034
	Percent of annual net energy	9.30	8.33	9.44	8.95	8.85	8.32	8.55	8.59	7.30	7.47	7.36	7.54	100.00
1950	Net energy for load	2,049	1,766	1,926	1,801	1,826	1,730	1,790	1,865	1,880	2,018	2,038	2,114	22,803
	Percent of annual net energy	8.99	7.74	8.44	7.90	8.01	7.59	7.85	8.18	8.24	8.85	8.94	9.27	100.00
1955	Net energy for load	3,137	2,823	3,144	2,933	2,964	2,988	2,940	3,070	3,034	3,208	3,491	3,618	37,350
	Percent of annual net energy	8.39	7.56	8.42	7.86	7.94	8.00	7.87	8.22	8.12	8.59	9.35	9.68	100.00
1956	Net energy for load	3,589	3,482	3,529	3,238	3,330	3,181	3,221	3,256	3,139	3,471	3,516	3,715	40,667
	Percent of annual net energy	8.82	8.56	8.68	7.96	8.19	7.82	7.92	8.01	7.72	8.54	8.65	9.14	100.00
1957	Net energy for load	3,959	3,151	3,459	3,465	3,543	3,467	3,562	3,552	3,259	3,558	3,599	3,692	42,266
	Percent of annual net energy	9.36	7.46	8.18	8.20	8.38	8.20	8.43	8.41	7.71	8.42	8.52	8.73	100.00
1958	Net energy for load	3,690	3,309	3,540	3,216	3,209	3,061	3,016	3,192	3,199	3,520	3,687	3,913	40,552
	Percent of annual net energy	9.10	8.16	8.73	7.93	7.91	7.55	7.44	7.87	7.89	8.68	9.09	9.65	100.00

[1] Northern and central California load area.

[2] Oregon and Washington load area.

TABLE 10.—*Estimates of carrying capacity of transmission lines for selected voltages and lengths of single circuit lines*

Transmission line voltage, in volts	Line length, in miles	Approximate line capacity, in megawatts
230,000	150	260
345,000	150	525
460,000	150	800
230,000	200	200
345,000	200	450
460,000	200	700
230,000	250	160
345,000	250	380
460,000	250	600
230,000	300	130
345,000	300	320
460,000	300	525
230,000	350	115
345,000	350	285
460,000	350	465
230,000	400	100
345,000	400	250
460,000	400	425
230,000	500	90
345,000	500	220
460,000	500	360
230,000	600	85
345,000	600	200
460,000	600	330


COMPARISON OF ACTUAL AND ESTIMATED MONTHLY PEAK LOADS OF SYSTEM GROUPS OPERATING IN NORTHERN AND CENTRAL CALIFORNIA AND IN OREGON AND WASHINGTON
Monthly Peak Load-in Megawatts
Total of Peak Loads
Oregon and Washington West Group Monthly Peak Loads
Northern and Central California Monthly Peak Loads - Power Supply Area 46 -
16,000
14,000
12,000
10,000
8,000
6,000
4,000
2,000
0
1945
1960
1955
1956
1957
1958
1959
1960
1961
1962

Senator ENGLE. Do you have another set of witnesses?

Mr. LINEWEAVER. Yes, sir; we have a number of witnesses standing by.

Senator ANDERSON. At this point we will have the statement of Ken Billington on behalf of the Washington Public Utility Districts Association.

STATEMENT OF KEN BILLINGTON, ON BEHALF OF THE WASHINGTON PUBLIC UTILITY DISTRICTS ASSOCIATION

Mr. BILLINGTON. Mr. Chairman, members of the committee, my name is Ken Billington. I am executive secretary of the Washington Public Utility Districts Association, with offices at 1511 Tower Building, Seattle, Wash.

The association is comprised of membership of 25 public utility districts operating electric and water utilities throughout the State of Washington. These utilities serve in excess of 230,000 electric consumers. The bulk of the power sold by our utilities is obtained from the Bonneville Power Administration of the Federal Government. As direct customers of the Federal power system in the Pacific Northwest, we are concerned with the full utilization of all power resources of such system in a businesslike manner in order to obtain every possible dollar of revenue for repaying the Government's power investment in the dams and transmission lines of the Pacific Northwest, plus interest.

We appear here today in support of authorization and appropriation of Federal funds to the Bonneville Power Administration and the Bureau of Reclamation for a complete survey and study of the engineering and economic feasibility of a high-voltage grid for the transmission of surplus electric energy from the Pacific Northwest or Columbia River power system to California and vice versa. The Bonneville power system now has power which is surplus to the use and needs of the Pacific Northwest during certain portions of the year and which could be used very readily in California. Coming as it does during the summer months, it appears at first glance that this power would serve two useful purposes: One, to benefit California during the period of its greatest need; and, two, to benefit the Pacific Northwest system financially.

There are many factors involved, however, and we feel that no action on the disposal of power from the Pacific Northwest system should be made until after a thorough and complete engineering and economic study has been made. We are not only supporting a study on the part of the Federal agencies but have also been encouraging studies on a cooperative basis by the States of Washington, Oregon, and California to make certain that all proper interests are protected.

We understand that a portion of this hearing will review some preliminary plans advanced by the Bonneville Power Administration in connection with the sale of Columbia River power to one of the California utilities. We would oppose this arrangement as being premature until a more comprehensive and complete study can be made of the entire situation. It is possible that the small tieline and the amount of power involved will fit into the overall plans but we feel that no sale of power between regions should take place until the

full plan and full controls have been completed. We also must oppose this premature arrangement because we are not certain whether it fulfills certain fundamental requirements which we feel will be essential to the success of any tie between the two regions.

The first fundamental requirement is that no power shall be exported from any region to another region which is of use or needed in the exporting region. We feel that all Bonneville system customers, whether they be publicly owned utilities, privately owned utilities or industrial customers, should have first preference priority and rights to the power from such system on a first turndown basis before any contracts are entered into which will permit the sale of power at any time outside the Columbia River region. Speaking specifically as to preference for power, we take the position that any preference afforded a public agency in either region's power system must be subservient to the needs of any consumer in the exporting region's service area. How such right and safeguard can be placed into effect is of major importance in the studies for which we are asking.

A second fundamental requirement is that the common-carrier principle should be incorporated in any interregional tieline arrangement regarless of the owner. By this we simply mean that lines should be constructed of sufficient capacity to carry any excess power production and be available to any group for the transmission of surplus power. There are many non-Federal hydroelectric projects coming on the line in the Pacific Northwest which will have the same seasonal surplus power production curve characteristic as the Federal system. This surplus, or waste power, could be disposed of outside the Bonneville service area. The regional tielines should be open avenues for the use of any properly operated utility interest for the disposal of such excess power.

A third fundamental requirement which we feel is proper is to establish a policy under which no contract would be entered into by the Federal Government for the disposal of power from the Northwest river system until such contract had been submitted to congressional scrutiny for a period of time which will permit full public disclosure and examination of any proposed interregional power sales through the Federal system. A Federal system is shared by diversified utility interests while an individual utility is responsibe only within itself. We therefore think this check on Federal contracts for permitting full public perusal is a proper one.

We would close this testimony on a note of affirmative support for this tieline. As a result of the recession, the Bonneville system operated in the red for the first time in its history last year. This took place at a time when water was wastefully allowed to run to the sea without generating power. It took place at a time when substantial amounts of oil were being consumed in providing power for California powerloads. We feel that this tieline would have a good stabilization effect to prevent the increase of Bonneville rates which will be necessary unless additional income is obtained.

While substantial construction has gone forward on run of the river downstream plants, there has been delay and failure of development of upstream storage plants. It would appear from preliminary study that the Columbia River will have an excess of summer or waste power because of the large fluctuations in its flow between seasons of

the year. This cannot be used in the Pacific Northwest until such time as our base powerloads shift to fuel or atomic-fired steamplants. The potential rewards from the wise use of this great natural resource not only within the Pacific Northwest region but also in the other adjacent regions should be apparent.

We urge recommendation and support by your committee for authorization and appropriation of funds by which the Federal agencies of Bonneville Power Administration and the Bureau of Reclamation in California can make a comprehensive engineering and economic feasibility study of a high voltage tieline. We urge incorporation in any committee instructions the fundamental requirements which we outlined above.

Senator ENGLE. By order of the Chairman, the committee is adjourned until 10 o'clock tomorrow morning.

(Thereupon at 4:55 p.m., a recess was taken until Thursday, April 9, 1959, at 10 a.m.)

BONNEVILLE (PACIFIC NORTHWEST)-CALIFORNIA INTERTIE

THURSDAY, APRIL 9, 1959

U. S. SENATE,
COMMITTEE ON INTERIOR AND INSULAR AFFAIRS,
SUBCOMMITTEE ON IRRIGATION AND RECLAMATION,
Washington, D.C.

The subcommittee met at 10 a.m., pursuant to recess, in room 3110, New Senate Office Building, Hon. Henry R. Jackson presiding.

Present: Senators Jackson and Kuchel.

Also present: Senator Engle, and Goodrich W. Lineweaver, professional staff member.

Senator JACKSON. The subcommittee will come to order.

We will resume our hearing by calling as the first witness Mr. Robert Gerdes, executive vice president of Pacific Gas & Electric.

Mr. Gerdes.

STATEMENT OF ROBERT H. GERDES, EXECUTIVE VICE PRESIDENT, PACIFIC GAS & ELECTRIC CO.; ACCOMPANIED BY WALTER DREYER, VICE PRESIDENT AND CHIEF ENGINEER; AND JOHN F. BONNER, ASSISTANT TO THE VICE PRESIDENT AND CHIEF ENGINEER

Mr. GERDES. Mr. Chairman and members of the committee, my name is Robert H. Gerdes. I am executive vice president of Pacific Gas & Electric Co. Present with me are Mr. Walter Dreyer, the vice president and chief engineer of the company, and Mr. John Bonner on my right, engineer. These two gentlemen participated in the negotiations of the proposed contract with Bonneville, and they will be glad to answer any questions that you may have.

I have a prepared statement which it may be desirable for me to run through.

Senator JACKSON. Suppose we do it this way. Without objection, we will include the entire statement in the record as if read. And then you may proceed in your own way if you wish to summarize or skip the statement.

Mr. GERDES. I will proceed to read portions of this statement. I think that it will save time if I do that rather than to just try to summarize it, because the statement is rather short.

We are glad to have the opportunity to appear today before the committee at the invitation of your chairman, Senator Clinton P. Anderson, to discuss a proposed intertie between the power systems of the Pacific Northwest and California.

The press release announcing these hearings stated that they would be directed toward two phases relating to proposed interconnections between the Northwest and California. The first phase relates to current negotiations between the Bonneville Power Administration and Pacific Gas & Electric Co. for the transmission of surplus interruptible or dump energy from the Bonneville system to California.

BPA-P.G. & E. NEGOTIATIONS

As far back as last November and December, we had read reports in the technical press that Bonneville Power Administration might make an offer to sell dump energy to California as a means of obtaining revenue for the generation of power from water which would otherwise be spilled.

These reports were confirmed on January 7 when Dr. William A. Pearl, Bonneville Power Administrator, telephoned our president, Mr. Norman R. Sutherland, requesting a meeting of Bonneville Power Administration and Pacific Gas & Electric Co. representatives to explore the matter. Such a meeting was held on January 13 in San Francisco. Bonneville Power Administration representatives proposed the sale of surplus dump energy on a "when, as and if available" basis to Pacific Gas & Electric Co. at the Oregon-California border.

This meeting was followed by staff studies to determine the probable availability of Bonneville dump energy, the methods of transmission of such energy, the ability of the northern and central California market to absorb the energy, and the economic feasibility of the plan.

At about this same time, we understand that Bonneville Power Administration met representatives of the California-Oregon Power Co. to discuss the wheeling of dump energy from the Bonneville system through the California-Oregon Power Co. system to the border for delivery to Pacific Gas & Electric Co.

RESULTS OF COMPANY STUDIES

Our studies showed that the most economic plan for the transfer of Bonneville Power Administration dump energy would provide for:

1. Delivery of such energy by Bonneville to the California-Oregon Power Co. at their existing interconnections at Reston, Cottage Grove, and Yamsay, Oreg.;

2. Wheeling through the California-Oregon Power Co. system; and

3. Delivery of energy by the California-Oregon Power Co. to Pacific Gas & Electric Co. over:

(*a*) The existing 125,000-volt and 66,000-volt transmission lines interconnecting the two companies and

(*b*) a new 230,000-volt transmission line to be constructed by both companies from Klamath Falls on the California-Oregon Power Co. system to the Pacific Gas & Electric Co. Pit 3 powerhouse, a distance of 97 miles.

There is attached to this statement a map [1] which shows generally the systems of the California-Oregon Power Co. and the Bonneville

[1] The map (in color) is on file with the committee for reference purposes.

Power Administration in southern Oregon, as well as the Pacific Gas & Electric Co. system in northern California.

It also shows in red the line that would be constructed between Klamath Falls and the company's Pit 3 plant, which is near the head of its transmission system in the northern part of California.

From Pit 3, the energy would be transmitted more than 250 miles over existing Pacific Gas & Electric Co. lines to load center in the San Francisco Bay area. We can make capacity available in these lines by changing some of our hydroplants from a peaking to a base load operation. This can be done without additional capital cost.

The only capital outlay involved in this plan would be construction of the Klamath Falls line and its related facilities, which it is estimated could be built by the two utilities at a cost of slightly more than $4 million.

In the studies, careful consideration was given to the amount of surplus dump energy which Bonneville Power Administration estimated would be available for export after meeting all existing and future requirements of the Pacific Northwest, including those for steam replacement and interruptible loads.

The combined capacity of the existing 125,000-volt and 66,000-volt lines and the new 230,000-volt line would be 200,000 kilowatts. Consideration was also given to the ability of the California market to absorb the dump energy which could be brought in under the plan.

Based on all the foregoing considerations, our studies indicated that the total annual delivery over the existing and proposed interconnections would average about 1,130 million kilowatt-hours, measured at the border.

The economic analysis of the plan was based on the Bonneville Power Administration offer to sell this dump energy to Pacific Gas & Electric Co. at Bonneville's established C–4 rate with standard modification for sale of interruptible, or dump, power. The charge, for energy delivered at the Oregon-California border, would be 2.1 mills per kilowatt-hour if energy were taken at 95 percent load factor and 2.5 mills if the load factor were 80 percent.

Assuming 95 percent load factor and amortization of the Pacific Gas & Electric Co. section of the new line during a 10-year period, we estimated that the average cost to us of such energy, after transmission losses, would be 3 mills per kilowatt-hour at load center.

On this basis, we determined that the plan would be economically feasible if the dump energy were delivered to us at times when it could be used to reduce generation in some of our older and less efficient steamplants. This dump energy from the Northwest has no use in our area, except as replacement for energy which otherwise would be generated in steamplants.

PRELIMINARY CONTRACT NEGOTIATIONS

Following completion of Pacific Gas & Electric Co. studies, Dr. Pearl arranged a meeting between Bonneville Power Administration, the California-Oregon Power Co., and Pacific Gas & Electric Co. which was held in Portland on March 11. It was agreed that the California-Oregon Power Co. and Bonneville Power Administration would proceed with negotiations for a wheeling contract, and Pacific

Gas & Electric Co. and Bonneville Power Administration would proceed with the drafting of a sales contract.

After further exchanges regarding proposed contract provisions, preliminary drafts of the wheeling and sales contracts were prepared. We understand that Dr. Pearl has submitted them to your committee.

DRAFT OF BPA-P.G. & E.

In essence, the draft of our contract with Bonneville Power Administration contemplates that, subject to the applicable provisions of the Bonneville Act:

(1) Surplus dump energy in excess of the needs of the Northwest area would be sold to Pacific Gas & Electric Co. at the Oregon-California border on a "when, as, and if available" basis at Bonneville's established C–4 rate for interruptible power. The Administrator, at his sole discretion, would have the right to curtail or stop deliveries of energy to the company at any time.

(2) Energy would be delivered to Pacific Gas & Electric Co. for Bonneville's account by the California Oregon Power Co. under a wheeling contract between the California Oregon Power Co. and Bonneville Power Administration; the California Oregon Power Co. would construct necessary additional transmission facilities in Oregon.

(3) Pacific Gas & Electric Co. would construct the California part of the 230,000-volt Klamath Falls-Pit 3 transmission line.

(4) Both Bonneville Power Administration and Pacific Gas & Electric Co., through the California Oregon Power Co., would have use of transmission facilities for emergency breakdown relief.

(5) Term of the contract would be for 10 years, and thereafter from year to year up to a total term of 20 years.

BENEFITS OF THE PLAN

The plan upon which all parties have reached agreement is a reasonable, practical, minimum-cost plan which will provide substantial benefits at the earliest date.

The proposed intertie would make maximum use of existing high voltage transmission facilities in both areas. In our area, the energy would be transmitted over existing facilities extending more than 250 miles from Pit 3 to the San Francisco Bay area.

The only construction necessary is the new line covering the 97-mile gap between the California Oregon Power Co. system at Klamath Falls and the Pacific Gas & Electric Co. system at Pit 3. This is the shortest distance between the 230,000-volt transmission systems of the Northwest and California. Because of this short distance, a minimum capital expenditure is required to increase the existing interconnecting capacity between areas.

The capacity of the new line, together with the existing interconnections, is substantial. The lines are capable of transmitting 1¾ billion kilowatt-hours per year of Northwest surplus energy to California. The new line alone could transmit more than 1¼ billion kilowatt-hours.

This plan will make possible the sale of dump energy which is not needed in the Northwest—and, in fact, would not otherwise even be

generated—and will result in an average net revenue to Bonneville Power Administration of approximately $1¾ million a year. In normal years, this revenue could exceed $2½ million.

The plan also will make available an additional 150,000 kilowatts of capacity to the Northwest which can be called on in the event of emergency.

Pacific Gas & Electric Co. has the responsibility of providing adequate and economic power supplies for the service area of northern and central California. In carrying out this obligation, the company in the past has provided interconnections with other power systems to the north, east, and south of its service area as well as within the area.

At the present time, Pacific Gas & Electric Co. has (*a*) two interconnections, one at 66,000 volts and the other at 125,000 volts, with the system of the California Oregon Power Co., as previously described; (*b*) two interconnections at 110,000 volts and one at 60,000 volts with the system of Sierra Pacific Power Co., which operates in eastern California and western Nevada; and (*c*) a 230,000-volt interconnection with the system of Southern California Edison Co.

We have built these interconnections as and when it has become necessary and economic to do so. In the present circumstances, we now are proposing the additional interconnection with the California Oregon Power Co., which can be accomplished at minimum cost by reason of the ability to use, for the most part, existing facilities.

We are prepared to provide additional interconnections with Oregon, Nevada, or southern California, whenever conditions justify such construction.

OTHER INTERCONNECTION PROPOSALS

Mr. Chairman, there is a second map which has been placed before you.

Senator JACKSON. There is a map attached to your statement?

Mr. GERDES. Yes, there is another map [2] which I believe has been distributed.

Senator JACKSON. Map showing existing and projected transmissions?

Mr. GERDES. The map I refer to is entitled "Principal Transmission Lines in Washington, Oregon, and California Showing Proposed Northwest California Interconnections."

Do the other members of the committee have a copy of that map?

Senator JACKSON. Yes; we do.

Mr. GERDES. This map shows in black the existing major transmission lines in Oregon and California. You will note that there are two existing interconnections between Oregon and California shown in black.

To the east, you will note a solid red line between Klamath Falls and Pit 3. That is the proposed 230,000-volt line that the power companies would construct.

The other long red line, which is shown as a dashed line, represents the course of a possible higher voltage transmission line that has been

[2] The map (in color) is on file with the committee for reference purposes.

reported in the press. And I understand such a line has been proposed in testimony here.

Senator JACKSON. What is that dashed line that runs all the way along there? Who is proposing that?

Mr. GERDES. There have been various proposals reported in the press by several different agencies proposing such an interconnection. The dashed line is an example of what such a proposed line could be.

Senator JACKSON. You are talking about a Government line?

Mr. GERDES. Yes; a Government line.

That is as I understand the proposals.

POWER OVER LONGER PROPOSED LINES NOT ECONOMIC

Now, I would like to call your attention to this fact: The price at which the Bonneville sells dump power, as I understand it, throughout its service area is approximately 2 mills a kilowatt-hour at 100 percent load factor or 2.1 mills at 95 percent load factor.

We started out in our computation with 2.1 mills at the border. To that we added the cost of the annual charges on the line, which is shown on the map in solid red, that we would build below the border. We added to that nothing for the use of our transmission system from Pit 3 to load center, but only adjusted for transmission losses. On this basis, we arrived at an estimated delivered cost of that power of approximately 3 mills per kilowatt-hour.

Now, as we said in our statement, 3 mills per kilowatt-hour is not competitive with power produced in our most efficient steamplants. We have, however, some older plants that are less efficient, and that 3-mill power could be used to replace the generation in those less efficient plants.

It is obvious to me, not an engineer, that if you add not only the annual cost of these other proposed transmission lines from Oregon down to the general vicinity of Pit 3 but the annual cost of any new line or lines extended further south into California, down to wherever you might want to build them, or down near the San Francisco Bay area, you obviously are going to add to that 3 mill cost.

And our preliminary studies indicate that you soon price that power out of the California market. And that is the point that I wanted to bring out in connection with this map.

Senator JACKSON. Does that complete your presentation?

Mr. GERDES. That completes my presentation.

BPA DUMP ENERGY REPLACES P. G. & E. STEAMPLANT FUEL

Senator JACKSON. Thank you, Mr. Gerdes. I just have a couple of questions.

As I understand it from your statement, the net effect of this arrangement would not be to add to the sum total of power available in California, but would act as a replacement for the utilization of your steamplants?

Mr. GERDES. That is correct. Because we were told by the Bonneville Power Administration that all they had to sell us was only so-called surplus or interruptible power.

Senator JACKSON. I understand. But I mean if you receive this, you will terminate your system operation to the extent that you receive power from Bonneville during this period.

Mr. GERDES. That is the only way we can use it.

Senator JACKSON. So, No. 1, it will not give to California any additional power supply? Secondly, it will have the effect, however, of reducing the cost of power on the part of Pacific Gas & Electric Co.?

Mr. GERDES. It will have, to a slight degree; it depends on what steamplants are shut down.

Senator JACKSON. I don't assume you enter into it unless you would be able to save something under the facts as you related them.

Mr. GERDES. We estimate that we will recover our costs and we might be able to save something in addition. But as far as we are concerned, this is a marginal operation. It is marginal because we could not afford to shut down our most efficient modern steamplants, but only the less efficient. And there must be some margin of benefit so that we can amortize the cost of the new line between the border and Pit 3.

If there is something left over, that benefit would accrue to our rate payers.

P. G. & E. ONLY CALIFORNIA CUSTOMER FOR BPA DUMP ENERGY

Senator JACKSON. Well, in view of the fact that there are apparently other customers in California, as indicated by a letter from the Governor, and by my colleagues here from California in connection with their statements, don't you feel that the power that comes in at least ought to be distributed equitably to the people who are customers in California?

Mr. GERDES. Well, we furnish electric service to about 6 million people in California. What I can't understand is the statement that there are customers for surplus power other than the company in northern and central California.

For example, last year, the Central Valley project produced and sold to us approximately 1.4 billion kilowatt-hours of dump power. There was no other customer in California that desired to purchase that power.

Senator JACKSON. Was this during the summer months of the pumping?

Mr. GERDES. A lot of it was produced during the summer months.

There has been surplus dump power available from the Central Valley project since the time that it was constructed and we have bought all of it. Up to date, the only party that has been able to use any of that power has been Pacific Gas & Electric Co. There is no other agency in the area that has the steamplants that can be shut down to utilize power which is available only on a "when, as, and if" basis.

Senator JACKSON. Well, I will leave this matter to my colleagues from California. Because I had understood, at least from the statements here, that the California water program required this power.

Now, if this is the case, it does seem to me that the public interest enters this field, and that some protection should be provided to the people of California that need it.

As it is proposed now, this is simply a replacement for the utilization of existing steam facilities, and it will not add to the sum total of power availability in California.

Mr. GERDES. My understanding of those suggestions has been that this dump power might be used in connection with the California water plan.

Now, the State of California has, as you no doubt know, a very elaborate plan for transferring water from the Sacramento-San Joaquin Valley on down into southern California, and it will require a very considerable amount of water pumping.

Our engineers follow the plans of the State department of water resources very closely. We have not seen any proposal which would require any substantial amounts of power for water pumping in connection with the California water plan until about 1970.

Senator JACKSON. Well, this is something they can go into.

Mr. GERDES. Yes.

Senator JACKSON. I also want to say that it is not necessarily a valid objection that Bonneville should not sell power simply because it is not going to add to the power output in California. I am not contending that. I am merely trying to get the record straight here. Because I think there is the impression that under this arrangement the California—the State of California would have more power available to it. But the net effect of this is not to do that, but simply to reduce the cost of power by the replacement to the extent that Bonneville makes secondary power available of your less efficient steam plants.

Senator Kuchel?

Senator KUCHEL. Mr. Gerdes, what is your understanding of the contract that has been negotiated with respect to cancellation?

Mr. GERDES. My understanding of the contract that has been negotiated is that it is quite clear from section 2 that the Administrator can make this power available at his sole discretion. That is the language. It goes on to say that power and energy may be curtailed by the Administrator at any time. It is my understanding of this contract that the Administrator could stop deliveries to us arbitrarily or for any reason whatsoever. He might stop deliveries to us because the State of California wanted and had some use for this power. In my opinion he could stop delivering power to us and make the power available to the State of California. There would be no redress on our part.

We are taking a chance on the investment in the new interconnection to the extent that the power may be taken away from us. But we regard it as just a normal business risk that we are justified in taking.

Senator KUCHEL. The Governor of our State, in a letter which I put in the record yesterday, which he wrote to the Governors of both Oregon and Washington, objected to the contract. And I think in part he objected to it because he wanted a 3-State study to continue to conclusion.

Are you acquainted with any study that is being undertaken by our State in connection with this problem now?

Mr. GERDES. I understand from press reports that there have been statements that a study of the possible advantages of a larger line may be undertaken. That is the extent of my knowledge, Senator Kuchel.

Senator KUCHEL. But you answer unequivocally that from your own background as a lawyer you do not hesitate at all to say that the Federal Government would have the right to cancel this agreement of a sale in its sole and single discretion.

Mr. GERDES. I will stipulate right now that the power can be curtailed at any time.

The contract purports to run for 10 years. But as far as delivering any power, he is under no obligation of any kind to deliver power to us. And in my judgment, he can take the power away from us and deliver it to somebody else during the entire time of the contract.

Senator KUCHEL. So to that extent that 10-year provision is relatively meaningless.

Mr. GERDES. To that extent. As far as giving us any assurance of receiving power throughout the 10 years and recovering the capital we put in, it is meaningless.

Senator KUCHEL. Yesterday testimony was adduced before the committee favoring a study looking forward to the interconnection of the Bonneville project. And the Central Valley project. What would be the position of your company on that?

Mr. GERDES. I don't know that we as a company would have any position as to whether the Bonneville Power Administration and the Central Valley project should make a study such as you mentioned. The advantages that such a study might show, such as integration of power, have been, so far as the Central Valley project is concerned, I think, nearly completely realized due to the integration that has taken place between the Central Valley project and the Pacific Gas & Electric Co.'s system. Under this integration, a supply of dependable power to the order of 190,000 kilowatts that would exist in the Central Valley project if operated alone has been built up by such integration to 450,000 kilowatts. I am sure you know this, Senator Kuchel.

Now, whether any additional capacity values could be realized on the Central Valley project, I would not know. I would doubt that it would be very much because of the integration that has already taken place with our system.

May I point out another factor. It is difficult to see how any real values of capacity could be obtained by integration unless there were an obligation on the part of the Bonneville to make power deliveries.

In other words, the Bonneville area would have to be willing to dedicate to the California area the surplus power that it may have over a period ahead. So long as the situation exists, as it does under this proposed contract, the power could be taken away from us at will, and any values of integration might be very illusory.

In other words it would require a firm commitment by the Northwest to give to California the surplus power that we are discussing here.

Senator KUCHEL. What I am getting around to talk about is the State water plan which your and my State is about to undertake to construct.

Mr. GERDES. I hope they do, Senator. We have expressed ourselves many times as being desirous of doing everything we can to aid in that development.

Senator KUCHEL. The problem which will arise when any appreciable segment of that project is constructed is where the power will come from for necessary pumping.

Mr. GERDES. That is correct.

Senator KUCHEL. And there is where apparently you and I have some cleavage, to say the very least. The State plan envisages now in the communication that the director of water resources sent to the Bureau of Reclamation the use of power from the Central Valley's project for the pumping required, at least in a portion of the Feather River project.

Is that not true.

Mr. GERDES. I don't know that we have any cleavage on that, Senator. I understand that the State is considering the use of the power or its equivalent for that water pumping. We have made various proposals to the State of California under which we have suggested that we would supply offpeak steam energy for such pumping. Our studies show that that would be the cheapest potential source of power for the State of California for that purpose. The State engineer of California has in public communications indicated that that is true.

Now, whether the State should use the power to be generated at Oroville Dam by transmitting it directly to the pumps, or whether it should be taken into our regional system during on-peak hours when the State can receive the greatest revenues, and other power delivered in its place is another subject.

Senator KUCHEL. Mr. Gerdes, were you here yesterday, or have you seen Governor Brown's letter to the Governors of Oregon and Washington?

Mr. GERDES. No, I have not seen it.

Senator KUCHEL. Let me read a little bit of this to you. This is from his letter to both the chief executives of Oregon and Washington.

As I write to express my concern over the possible establishment of an interstate power tie-in done in haste and preempting the thorough but rapid study of the problem by the three States involved—

then skipping some of his language—

because of the large amounts of surplus energy that will be needed in our water program—

I interpolate there that I assume he means the Feather River project.

Mr. GERDES. I would think the California water plan would be what he would be referring to.

Senator KUCHEL. Of which the Feather River plan would be a part.

Mr. GERDES. That is right.

Senator KUCHEL (continues reading):

and because the Northwest surplus may solve the problem, I believe any premature stopgap measure might deter the States from proceeding later on a basis which would provide for maximum use of these power resources. That is why I would not favor the proposed agreement between the Bonneville Power Administration and the Pacific Gas & Electric Co. until and unless the 3-State study shows that it is definitely a desirable part of the larger job that must be done.

Mr. GERDES. My comment on that would be that the Governor has misconceived what we were trying to do in this proposed intertie contract.

Certainly we are not preempting anything, as inferred in that letter, if it can be taken away from us at will at any time.

So, I can't see any conflict between what we are proposing and the California water plan. Bear in mind that any major water pumping by the State is 10 years away according to any of the studies that I have ever seen. Our engineers have been working with State engineers on the plan and try to keep up on these things.

As I understand it, the Bonneville Power Administration has indicated that 10 years from now they have serious doubts whether there is going to be much surplus power left due to the construction of upstream storage and installation of thermal plants in the Northwest which will firm up this power.

Senator KUCHEL. I want to say, Mr. Chairman, there is a representative of the State of California here. I would like to have him testify subsequently. And then if we have any more questions with respect to the State's position, you will be here throughout the hearing.

Mr. GERDES. Yes.

I just can't believe there is a conflict. In the first place, this intertie plan was not the idea of Pacific Gas & Electric Co. It is something that the Bonneville Power Administration came to us with, and said, "Well, we are probably going to have a lot of surplus power for the next 10 years during maybe 3 or 4 months in some years, and in some years, a little longer. Do you desire to buy it?"

We studied it, and found that we could go ahead with it, although, as I said, financially it is a marginal undertaking.

Senator JACKSON. Do I understand that Bonneville Power Administration solicited you, but you folks did not solicit Bonneville Power Administration?

Mr. GERDES. Oh, yes, they came to us.

Senator JACKSON. Do I understand further that over the years Pacific Gas & Electric has not expressed an interest of an interconnection with the Bonneville System?

Mr. GERDES. I know of no such expression.

We have looked into this matter of an intertie at various times. You know the history. The difficulty was that in the past it could not be justified.

But now the Pacific Northwest has got a situation where they have substantial amounts of surplus power. And our studies indicate that we can use it.

And I emphasize that to my knowledge no one else in California can use it.

Senator JACKSON. Dr. Pearl, do I understand that Bonneville asked, or solicited Pacific Gas & Electric for the purchase of power, is that correct?

Dr. PEARL. That is correct. Bonneville has 10 billion kilowatthours of power going to the ocean. And we are soliciting markets. And we solicited——

Senator JACKSON. Did you solicit the State of California?

Dr. PEARL. As a State?

Senator JACKSON. Yes.

Dr. PEARL. No.

Senator JACKSON. Why not?

Dr. PEARL. They do not operate a system in the State.

Senator JACKSON. Well, they have power requirement available. Did you take it up with the Governor of California?

Dr. PEARL. Well, I spent considerable time yesterday talking to you about the quality of this power. And to us I think as the witness has indicated this morning, the only way this power can be used is as a replacement for steam.

And so we did not solicit anyone that didn't have a use for the power or couldn't use the power.

Senator JACKSON. Well, do I understand that in your judgment the only one that could possibly utilize this type of power in California is Pacific Gas & Electric?

Dr. PEARL. As far as I know. We checked on the other power sources in California.

Prior to the time that BPA discussed the sale of surplus energy to Pacific Gas & Electric Co., the BPA staff analyzed the system requirements and power source of all publicly owned and cooperative electric power distributors in northern California. A table showing their power source and their system energy requirements is attached.

Since none of the systems had resources that could have been replaced with BPA surplus energy, no contacts were made with any of the listed publicly owned and cooperative systems.

Power source of publicly owned and cooperative electric power distributors in northern California, 1957

System	Power source	Energy delivered to system (in millions of kilowatt-hours)
Alameda	Pacific Gas & Electric	194
Biggs	do	1
Gridley	do	7
Healdsburg	do	9
Lodi	do	52
Palo Alto	do	124
Redding	do	93
Roseville	Central Valley project transfer through Pacific Gas & Electric.	19
Sacramento MUD	Central Valley project	[1] 1,025
Santa Clara	Pacific Gas & Electric	130
Ukiah	do	30
Shasta Dam Area PUD	Central Valley project	1
Plumas-Sierra REA	Central Valley project transfer through Pacific Gas & Electric.	8
Surprise Valley Electric Cooperative.	Copco	15
Truckee PUD	Sierra Pacific Power Co	4
Modesto Irrigation District	Own hydro generation	273
Turlock Irrigation District	do	190

[1] 1956.

Senator JACKSON. Well, how about the preference bodies, the public bodies?

Mr. GERDES. The best evidence of that is the fact that last year there were nearly a billion and a half kilowatt-hours generated in the Central Valley project which the so-called preference agencies could have purchased if they wanted to. But they purchased none. The reason they didn't purchase it is that they can't use this type of power.

Dr. PEARL. Senator Jackson, we are submitting for the record the type of power that they all have. And we submitted that yesterday. We checked on that before we came.

Senator JACKSON. Well, I just think it would be wise to consult the Governors. We hear so much about States rights and the rights of the States these days—and I don't mean to be snide about it—I mean to be serious about it. I think we should be consistent and consult the States. We do for certain purposes, and we don't for others.

I don't think this is necessarily a smart approach to be very frank about it, especially with the background of conflict on this whole question of intertie.

It is always wise to make all of the places and check things out. Then you don't run into trouble. But here we have the Governor of California now writing a letter to the Governors of Oregon and Washington making it very clear they have need for it.

Senator ENGLE. And Governor Rossellini of Washington writes in and says that he would like to be consulted.

And further than that, that the study by the States should precede any commitment made in this direcion.

Senator JACKSON. Exactly. And the present administration has encouraged this type of action. They have talked about compacts and everything else, for State cooperation. And I think it is a mistake, regardless of one's approach to the power problem—I think we ought to consult the States. And I would say that if the administration was a democratic one.

I know when we had this fight on the intertie—and this is going back 9 years or 8 years—the Governors were consulted. They were rather vociferous on this subject.

Senator KUCHEL. Mr. Gerdes, how much money did you say it is going to cost your company to construct that transmission line?

Mr. GERDES. Approximately $3 million. My associate, Mr. Bonner, tells me that California Oregon Power Co. will spend about a million dollars and Pacific Gas & Electric Co. will spend $3 million, which makes up the $4 million.

Now, I may have misspoken myself earlier and stated that we were to spend $4 million. If so, I would like the opportunity to correct that in the record.

Senator JACKSON. That is all right.

Senator KUCHEL. And in your calculations, you are going to amortize that out in 10 years. What you are doing is gambling that for 10 years they are not going to cancel that contract on you?

Mr. GERDES. I would say in our business we don't gamble but we take business risks.

Senator KUCHEL. All right. And that is the risk you are taking?

Mr. GERDES. That is the risk we are taking.

Senator JACKSON. You take the same business risks as General Motors or Du Pont?

Mr. GERDES. I am not very familiar with the risks that those companies take.

Senator JACKSON. Well, you read the Wall Street Journal just like the rest of us do. You are not in the same category.

Mr. GERDES. We take calculated business risks. I wouldn't compare them with what those companies do. This is a calculated business risk as far as we are concerned.

Senator JACKSON. But not the kind that Ford undertakes when they get a wrong model and suffer 9 months' loss.

Mr. GERDES. No; it is not that big.

Senator JACKSON. I mean Ford can't go out and readjust prices and say this is what you have to pay, can they?

So it is a risk in a little different sense. Let's be fair and frank about it. There is nothing wrong with it. I think you are in a proper business. I am not objecting to it. But candor sometimes is very disarming, you know.

Dr. PEARL. Could I make a comment?

Senator JACKSON. Sure.

Dr. PEARL. Since the States indicated an interest in this power, we have contacted representatives from each one of the three States and none of them have requested a contract or indicated an interest in a contract for this power.

Senator JACKSON. When was this done?

Dr. PEARL. Since we learned the States were interested.

Senator JACKSON. The Governors have made it very clear, at least two Governors have made it very clear that they object to the proposal as it is. At least they want a thorough investigation and hearing on this which we are now giving them.

Dr. PEARL. My men have met with respresentatives of the States to discuss this. They are interested in purchasing this power.

Senator JACKSON. I don't think all the States are acting—well, the State of Washington is not expressing an interest in the purchase of the power. I don't think that is why you should consult the Governor. I think the Governor of a State does have an interest in the overall economy whether they are public or private utilities within the State. And it is not necessary that the State be in the power business in order to express a proper interest, I don't think.

Do you?

Dr. PEARL. Well, of course, that is a little different approach. I mean in reality that, I would say, is the reason that we didn't contact the Governors, because they are not in the power business.

Senator JACKSON. I understand. You say that you did not do it on the basis that at the time you were consulting only potential purchasers. My only thought is that looking back at the history of the intertie problem that it might have been wise to consult the Governors, because of the expressed opposition of the Governors back in 1950–51.

Now, on hindsight we all have better ideas, including myself.

Mr. MORTHLAND. It is our understanding although we have not seen the communications sent to the committee by the States as such; but it is my understanding after talking to the Governors' office in Salem, Oreg., that the State of Oregon and the State of Washington do not oppose the proposition that we have been talking about with Pacific Gas & Electric.

They do think—and this is my understanding, as I say——

Senator JACKSON. Have you seen Governor Rossellini's letter?

Mr. MORTHLAND. No. But they do want to go ahead with the study, which we don't object to at all.

Senator JACKSON. I think Mr. Morthland, you will find that the Governor of the State of Washington is not in favor—look, here is what they say. This is the letter of April 6:

In the meantime, I commend Governor Brown of California and Governor Hatfield of Oregon for their participation with me in our three-state studies of the broad economic aspects of the California power intertie and respectfully suggest that Congress take no final legislative action on construction of a major intertie until our three-State findings have been concluded. The request is made in order that the economic interests of the people of the State of Washington may be fully protected.

Mr. MORTHLAND. I understand that, but Senator, on Tuesday of this week I talked to the office of the Governor of the State of Oregon by telephone to learn the results of a meeting which was held last Friday among representatives of the three States. I was advised by his office that the State of Washington and the State of Oregon did not oppose the proposed contract which we have now with Pacific Gas & Electric.

Senator JACKSON. Let me just clarify it right now.

Mr. Earl Coe, State director of conservation, State of Washington. What is the position of the State of Washington?

Let me ask you this question.

Is the State of Washington in favor of the Bonneville Power Administration—Bonneville Power Administration going ahead at this time with the proposed contract with Pacific Gas & Electric Co. and California Oregon Power Co.?

Mr. COE. Our position on that question has been one of, first, a lack of full knowledge of what the contract contained, with the desire of course that Bonneville develop some method of increasing its revenue.

But we have asked that a study be made in cooperation with Governor Brown and Governor Hatfield, so we can fully determine the effect of this contract on the resources of the Northwest.

Senator JACKSON. In the meantime—well, of course, if the contract is executed, the study would be——

Mr. COE. Would be of no effect.

Senator JACKSON. That is right, of no effect. So what is your position, then, until the study is completed?

Mr. COE. Our position is that we had hoped within the next 6 months at least that our State study could be completed, and that we could then make a full recommendation on this matter.

Senator JACKSON. Now, do you want this matter to be held in abeyance?

Mr. COE. Yes, we ask that it be held up.

Mr. MORTHLAND. Then I have been misinformed as far as the position of the State of Washington.

Senator JACKSON. I had understood in oral conversations, Lane, that that is what their position was.

Mr. MORTHLAND. I am glad to be set straight.

Senator JACKSON. I think for the record we should get it straight. It was a bit ambiguous up until then. I think the State of Washington is in the situation where they didn't know for sure exactly what the proposal was. And their position now is that while they express no direct opposition—I think this is right, Mr. Coe—I take it the State of Washington's position is that at this time they have not taken a position for or against the private interconnection or the Federal interconnection.

What they want is a full and complete study to get all the facts first.

Mr. COE. That is correct.

Mr. KUCHEL. Have you made that position known to the Bonneville Power Administration, Mr. Coe?

Mr. COE. I will be glad to give a copy of Governor Rossellini's statement.

Senator JACKSON. The letter was presented yesterday for the record.

Off the record.

(Discussion off the record.)

Senator KUCHEL. Senator Engle?

Senator ENGLE. Mr. Gerdes, this proposed contract provides no wheeling arrangement whatever, does it? It is a volume and sale contract?

Mr. GERDES. It is a sale contract.

Senator ENGLE. In short, this public power coming out of the Booneville system and delivered to the Pacific Gas & Electric would not be available on a wheeling basis by the Pacific Gas & Electric to a preference customer in California?

Mr. GERDES. That is correct.

Now, when you speak of a preference customer in California, I am a little confused as to whether you mean the preference customer in California—a city, for example—is entitled under the Bonneville Act to a preference to power from the Pacific Northwest.

Now, that suggestion is implied in your question. And I don't know how to answer it.

Senator ENGLE. Would you disagree with that?

Mr. GERDES. As a matter of fact, it is my opinion that if a public line is built from Bonneville into California, then the State of California and all the so-called preference customers in California will be entitled to a preference along with and equally with the cities and districts in the Pacific Northwest. In my opinion it is quite clear that if such a line is built, then the preference customers, including the State of California, would be, as the Bonneville statute says: "Within economic transmission distance." Therefore, they would be entitled to a preference equally with all the cities and public districts in the Pacific Northwest.

Senator ENGLE. But the fact that California Oregon Power Co. and Pacific Gas & Electric are building the interconnection would cut off that preference right?

Mr. GERDES. Power transmitted over the interconnection between the California Oregon Power Co. and Pacific Gas & Electric Co. will not be available in California under the preference clause of the Bonneville Act.

Senator ENGLE. You have a wheeling contract now with the Bureau of Reclamation in the CVP, have you not?

Mr. GERDES. Yes.

Senator ENGLE. Would the provisions of that wheeling contract attach to and operate on the public power coming out of Bonneville?

Mr. GERDES. No, it would not.

Senator ENGLE. Is that true because of the terms of the contract?

Mr. GERDES. Yes; because of the terms of the contract. In the first place, our wheeling contract does not contemplate the wheeling of

such power. We would have to know all the circumstances under which a preference agency such as the State of California would desire to take Bonneville surplus power before we could make any provisions.

Under the proposal that we have made, we intend to back down our Pit River plants from a peaking operation to a base load operation to make room on our lines from Pit 3 to the bay area for the power coming from Bonneville.

Now, if that power were to be wheeled for the State of California, quite different arrangements would have to be worked out.

Senator ENGLE. I understand that. But your answer stands, does it not, that this is not a wheeling arrangement, and that this public power generated in the Bonneville system would not on a wheeling basis be available to preference customers in California?

Mr. GERDES. Bonneville dump energy would be available to them when it is there, but it wouldn't be available over our line unless wheeling arrangements were made. It would be available when they wanted it, because under our contract, as I mentioned earlier, the Bonneville Power Administration can cut off deliveries any time it wants to and give it to the preference agencies.

Senator ENGLE. And build its own lines.

Mr. GERDES. Yes. In fact, there has been discussion in the press that the States might build a line, as you well know, Senator.

Senator ENGLE. I just wanted to establish the point, if it is a point, that the preference customers are out in left field under this arrangement.

Mr. GERDES. Well, I don't know whether it is left field, because of the fact that preference customers in California have had an opportunity to buy CVP suplus dump power for the last 15 years. They haven't been able to use it.

Mr. Bonner suggests as long as we stick to your baseball terminology that they are no further out in left field under our proposed contact than they are right now.

Senator ENGLE. That is certainly true.

Have you determined the cost and the value of this power to the Pacific Gas & Electric Company's system at the load center? You stated in your statement the cost of this power.

As I read your statement, it is roughly 3 mills. When you calculated the advantages of this contract, what did you determine to be the value of this power at the load center?

Mr. GERDES. The value of the power is the cost of the fuel that we might save in a steamplant as a result of this power being available. And as I said in my statement, the saving would be something more than 3 mills a kilowatt-hour in our older and less efficient steamplants.

Senator ENGLE. Just what figure did you have there? I know you fellows operate with very sharp pencils. You had that Trinity power right down to a gnat's eyebrow. It seems to me it is 11 mills or 13. What figure do you have in your books there?

Mr. GERDES. We have this down to the same gnat's eyebrow.

I can supply, for the record, the cost of fuel in our steam units.

Senator ENGLE. I am interested in the conclusion you came to when you sat down there and figured it up. I want to know how much

money it is going to make per kilowatt between the cost of this power to you and the value to your system.

I am talking about the value to your system. And when I speak of the value to your system, I am not necessarily meaning the cost of producing so much oil. I know, for instance, on the Trinity that the value to your system was because that power could be used for peaking purposes.

In other words, it had a unique value. So, what I am trying to get you to state for the record is what you valued that power to your system when you sat there in your quiet conclaves and decided whether or not you were going to do this.

Now, what figure was stated?

Mr. GERDES. Your statement assumes that we have quiet conclaves. They are usually not very quiet. So, I find difficulty in answering your question for that as well as other reasons.

We have here available the fuel saving that can be accomplished in our steamplants.

Senator ENGLE. Let's get away from the fuel saving.

Mr. GERDES. Well, that is all the value there is. There is no other value to this dump power except fuel saving.

Senator ENGLE. Will you answer this question specifically? What value have you put on this power to your system at the load center?

Mr. GERDES. We——

Senator ENGLE. When you considered this program, I mean. I want to know what you fellows decided down there in your meeting that this power was worth to your system.

Mr. GERDES. Three mills.

Senator ENGLE. Why, you are going to lose money?

Mr. GERDES. No; that is just about breaking even. We may make a little if this energy can be used as a replacement for energy generated in some of the less efficient steamplants. It depends on the circumstances and the time the dump energy is available and can be used as replacement energy.

It depends on the new units that we add during this 10 years. It depends upon how much atomic power we bring in. We have no figure to answer your question under all these circumstances.

Senator ENGLE. You have just given 3 mills.

Mr. GERDES. Well, that is our best estimate.

Senator ENGLE. I don't want to argue the point. What I want to ask you is this: Is there any statement, entry, bookkeeping item, or other figure in evidence in the Pacific Gas & Electric Co.'s records today that gives a figure higher than 3 mills?

Mr. GERDES. No.

Senator ENGLE. There is not?

Mr. GERDES. No. But, as I said earlier, the use of that power to replace generation in some of our units could have a value higher than 3 mills.

Senator ENGLE. That is what I am getting to. Now, what is it?

Mr. GERDES. It might be 4 mills.

Senator ENGLE. Could it be 5?

Mr. GERDES. Four mills in our less efficient plants.

Senator ENGLE. Could it be 5?

Mr. GERDES. No, it wouldn't be that high. I have oil cost figures here which I can submit to you. You have to break down each plant; you have to consider each unit in each plant: the number one unit or number two unit or number three unit. They all have different efficiencies. The costs vary from a little less than 3 mills for the more efficient plants to nearly 4 mills for the less efficient plants.

We do not know which one we are going to be backing down when wet get this power.

Senator ENGLE. Very well.

Will you submit those figures for the record. And when you do, I would say, Mr. Chairman, that I don't regard that as a definite answer. But it is probably as close as I can get. And we are short on time.

Now, let me ask you a further question——

Senator KUCHEL. Will you submit those?

Mr. GERDES. Yes.

(This information requested is as follows:)

The total installed capacity in the company's steam electric plants, including two units now under construction, will be approximately 4 million kilowatts in mid-1961. The cost of fuel for operating these plants depends on their efficiency.

The following table shows the equivalent cost per kilowatt-hour, based on current prices, of the fuel oil used in plants that could be backed off in order to make room for BPA dump energy:

Order of steam unit efficiency	Aggregate steam unit capacity (megawatts)	Current cost of oil in mills per kilowatt-hour
1	650	2.8
2	1,155	2.9
3	460	3.3
4	910	3.8
Total	3,175	

Remaining capacity in company steam plants would not be affected by BPA power. This capacity is in standby plants at principal load centers, dual-purpose plants at oil refineries or adjacent to lumber mills, and in plants tied in with oil field operation.

The above costs of fuel per kilowatt-hour would be reduced if natural gas were used to fire the steam units. Such reduction would depend on the percentage of natural gas so used.

Senator ENGLE. One further question: You have stated that P.G. & E. and Copco are sticking their necks out financially to the tune of $4 million. And thereby taking what you call a business risk.

Now, wouldn't it be better for the Pacific Gas & Electric Co. for the Government to build the intertie between the two systems; that is, Central Valley project and Bonneville; permit the Central Valley project to utilize such of that power as it could in firming its own power, and in deliveries to preference customers and selling the balance to the Pacific Gas & Electric Co.?

Mr. GERDES. I don't think so.

Senator ENGLE. You would not be risking $4 million?

Mr. GERDES. No, we wouldn't.

Senator ENGLE. You can sit there and catch those kilowatts without a dime of investment.

Mr. GERDES. Our studies of the longer, higher voltage lines indicate that you are going to wind up with costs that are going to be way beyond anything that we can afford to pay. I don't believe we would be interested in purchasing dump power at what it would cost under such a proposal.

Senator ENGLE. Well, let's assume that the Government can put in those lines just about as cheap as you and Copco.

Mr. GERDES. The Government can build lines, we will assume, as cheaply as we can. But we have a peculiar situation in that we can use our transmission lines from pit 3 on south to load center, about 250 miles, without compensation, because we can handle the power from the Northwest over the existing lines by backing down the operation of our Pit River plants from peaking to a base load operation.

Senator ENGLE. In any case, you are saying that you would not be as well satisfied with a program under which the Government builds the transmission line, interhooked its two systems, used such power as it could in the Central Valley project system, and sold the balance as dump power to Pacific Gas & Electric Co.?

You would not consider that as beneficial to you?

Mr. GERDES. No. I think that when such a study is completed, it is going to show that the costs are such that we couldn't afford to purchase the power. If we did, it would be a burden on our customers.

Senator ENGLE. Thank you very much, Mr. Chairman.

Senator KUCHEL. Thank you, Mr. Gerdes.

Mr. GERDES. Thank you very much, Mr. Chairman.

Senator KUCHEL. Mr. Stanley W. Kronick representing the Governor of California, Governor Edmund G. Brown.

Senator ENGLE. Is the letter from Mr. Bellport of January 29, 1959, to Mr. Harvey O. Banks, director of the State of California Department of Water Resources in the record in which he states "No surplus power is available from our existing facilities" in answer to the inquiry with respect to power in the Central Valley project? Is that in the record?

Mr. LINEWEAVER. No.

Senator ENGLE. I would ask permission to include at this point the letter of January 16, 1959, written by Mr. Banks to Mr. Bellport in which the State of California requested surplus power, and the letter of Mr. Bellport in response of January 29, 1959, in which the statement was made that no surplus power is available from existing facilities.

Now, the reason I want that in the record is because of the statement made that some billion kilowatt-hours of power went to waste without any use by anybody, any preference customer. The State of California is a preference customer. If a billion and a half kilowatt-hours of power went to waste in California last year, then Mr. Bellport is sure wrong on his facts in his letter of January 29.

Senator KUCHEL. Those will be made a part of the record. But it runs in my mind that we put the Banks letter in but not the answer.

Mr. LINEWEAVER. Yes.

Senator KUCHEL. No matter. For continuity I order that the letters be placed at this point in the record.

(The letters referred to follow:)

UNITED STATES DEPARTMENT OF THE INTERIOR,
BUREAU OF RECLAMATION, REGIONAL OFFICE, REGION 2,
Sacramento, Calif., January 29, 1959.

Mr. HARVEY O. BANKS,
Director, Department of Water Resources,
State of California,
Sacramento, Calif.

DEAR MR. BANKS: This will acknowledge your letter of January 16 in which you apply for power for your proposed Delta diversion projects pumping. No surplus power is available from our existing facilities. However, we will be glad to discuss your power needs at your convenience.

We assume that you are also considering use of power generated from future State power facilities for Delta pumping.

Sincerely yours,

B. P. BELLPORT, *Regional Director.*

STATE OF CALIFORNIA,
DEPARTMENT OF WATER RESOURCES,
Sacramento, January 16, 1959.

Mr. B. P. BELLPORT,
Regional Director, Region II, U.S. Bureau of Reclamation,
Sacramento, Calif.

DEAR MR. BELLPORT: In the studies being made for supply of the large amounts of pumping power that will be required for the State's Delta diversion projects, the Federal Central Valley project has been considered as a possible source. Investigation as to the present or future availability of such power appears to be appropriate at this time in view of the possibility of congressional authorization of the proposed Auburn development which would make additional power available in the future.

Application is hereby made for Federal Central Valley project power in whatever amounts can be made available to the State of California for Delta diversion projects pumping. We suggest that negotiations be initiated as soon as possible to determine the cost and availability of energy for that purpose.

Very truly yours,

HARVEY O. BANKS, *Director.*

(Subsequent to these hearings, Regional Director Bellport on April 14, 1959, reported to the Commissioner of the Bureau of Reclamation on his letter of January 29, 1959, to Mr. Harvey O. Banks, as follows:)

We assumed Banks' letter to refer to firm power; however, as indicated in January 29 letter, we sought further meetings with Banks in order to clarify his reqeust. To date, we have heard nothing further from Banks.

Senator KUCHEL. We will take out of order the Honorable Harold T. Johnson, Member of Congress from California, if you don't mind, Mr. Kronick.

Mr. GERDES. Senator Engle, you made a statement, and I want to be sure that you didn't misapprehend what I said.

You made the statement that over a billion kilowatt-hours from the Central Valley project went to waste last year. I did not say that it went to waste. I said that it was dump power used by Pacific Gas & Electric Co. to save fuel in our steam plants the same way we would use the power from Bonneville if it is made available to us over this proposed line.

Senator ENGLE. I am glad for that clarification, because the record wasn't clear on it.

However, that doesn't negate the effect of Mr. Bellport's letter in which he said that there was no surplus power—"no surplus power is available from our existing facilities."

(Mr. Gerdes subsequently submitted the following letter:)

PACIFIC GAS & ELECTRIC CO.
SAN FRANCISCO, CALIF., *April 15, 1959.*

HON. CLINTON P. ANDERSON,
Chairman, Subcommittee on Irrigation and Reclamation Committee on Interior and Insular Affairs, U.S. Senate, Washington, D.C.

DEAR SENATOR ANDERSON: At the hearing last week on proposed interconnections between the Pacific Northwest and California, some members of your committee expressed doubt as to whether the Bonneville Power Administration could withdraw power from Pacific Gas & Electric Co. under the terms of their proposed contract, in order to serve public or private agencies from lines which might later be constructed.

This will confirm my statement to you that this company will agree to a provision allowing either party to terminate the contract on thirty days' written notice given to the other.

Very truly yours,

ROBERT H. GERDES.

Senator KUCHEL. Proceed, Mr. Johnson.

STATEMENT OF HON. HAROLD T. JOHNSON, A MEMBER OF CONGRESS FROM THE STATE OF CALIFORNIA

Mr. JOHNSON. Mr. Chairman and members of the committee, I appear here as the Congressman representing the Second Congressional District of California, a district which has a great deal of the Central Valley project located within it, and some of the proposed new developments to take place in the field of power. It is my understanding after talking with the Governor and his representatives who were here in Washington recently that they are very much interested in the State's interest in the particular intertie question and the contract that is now being considered by the Secretary of the Interior.

And from that conversation, I learned that they would like to see this contract held up for the purpose of making a further study. I am not trying to take Mr. Kronick's statement here. I haven't read it as yet. But the Governor and his representatives discussed this when they were here in Washington.

And at that time I wrote a letter to the Secretary of the Interior asking that this contract be held up until further studies were made by the States of California, Oregon, and Washington.

Now, in representing this particular area, we are vitally concerned with the preference power clause in the present reclamation law affecting our Central Valley system. And certainly if there is another Government facility within the area that can make an intertie and supply more power for preference customers, certainly it is up to me to see that that takes place.

You know that the city that I formerly represented as mayor was in a long fight for low-cost Federal power from the Central Valley system. And we have only received that on a very much of an interim surplus basis at the present time, cashing in on the other contracts that are held by preference customers.

Now, certainly we are going to do everything we can to make sure that if there is Federal power available that can be brought into the State of California that we work toward that end.

Also, there are other cities that operate their own municipal utility systems and are in a position to take power if power was available

on a preference customer basis. Now, recently I have talked with the mayor of Redding. And he is interested in receiving a supply of low-cost Federal power from the Central Valley system.

Now, I think that before any contract is entered into that the States do have an opportunity to make that study. And California embarking upon its waterplant for the first time, you might say, of a real construction program, it is going to be necessary to use huge amounts of power to pump this water to areas of need.

Certainly they are going to be a preference customer. And if we can bring new sources of low-cost power into the Central Valley system, it will benefit our State greatly. Now, I have a prepared statement here in connection with the contract that is now being considered by the Secretary of Interior that I would like to have placed in the record.

And representing the area that I do and the people within the area who want low-cost power under the preference clause, I must say that I would ask the Secretary of the Interior to hold up this particular contract at this time. And I would request that the committee so ask the Secretary to do that very thing.

Senator KUCHEL. Thank you very much, Representative Johnson.

Your statement will be incorporated in full in the record, and the committee will give consideration to making a recommendation as you have requested it to do.

I invite you to stay here if your time permits.

Mr. JOHNSON. I will stay for the State's presentation to make sure I know their position.

(The prepared statement of Mr. Johnson is as follows:)

PREPARED STATEMENT OF CONGRESSMAN HAROLD T. JOHNSON, MEMBER OF CONGRESS FROM CALIFORNIA

Mr. Chairman and members of the subcommittee, thank you for giving me an opportunity to comment before this subcommittee on the Pacific Northwest California Power intertie. My interest in the Bonneville Power and Pacific Gas & Electric partnership agreement, which is being reviewed by this subcommittee, comes among other things from the fact that my district embraces the Federal Government's Shasta Dam, Keswick, and Folsom Dam powerhouses. Also, the Trinity River powerhouses now authorized as part of the Central Valley project are also in the district which I am privileged to represent.

My district also includes certain municipalities which own and operate their power distribution systems, such as the city of Redding. These municipalities have been informed that no Federal power is available even though they have a preference under the Federal law in the purchase of power.

The needs of these companies such as the city of Redding and the requirements of Federal agencies in northern California can be met if more firm power is available. Government engineers have explained to me that there would be more firm power and there would be a greater return to the Federal Treasury if more energy could be put into the Federal Government's power system during the summer months. As you know, these are the months of low streamflow in my district.

Government engineers also tell me that Federal powerhouses in the Northwest have a surplus energy which now goes to waste during these same months when the Central Valley project needs energy. This happens because the summer months are the time of greatest runoff from the snowmelt in the headwaters of the Pacific coast streams.

Last year in the Trinity River project hearings before the House of Representatives, there was a showing that the Federal agencies themselves would be denied power from the Federal Government system after 1961 because the firm power is already committed under other contracts. There would be no

firm power for sale to Federal agencies, as this energy would be poured into the Federal Government's Central Valley system.

Another thing that disturbs me is that reports in the newspapers and on radio indicate the Bonneville Power Administration and the private companies put this agreement together in haste shortly after it was announced that the three Pacific Coast States were joining in a study of this intertie question. As far as I know, the States and other public agencies were not informed. No provision is made, according to my information, to permit Government agencies to use these private power companies' lines. This arrangement would be like sand flowing through an hourglass in which the narrow section is owned and controlled by the private companies despite Federal Power system on both ends.

My request to you, therefore, can be quite brief. I respectfully request the help of this subcommittee in preventing the monopoly of surplus power from Federal powerhouses in the Northwest by a private power company, even though it is located in California. I ask this help because the Central Valley project itself, owned by the Federal Government and much of it located in my congressional district, needs this power.

Putting this power into the Central Valley system would help both private and public agencies without discrimination to either. In fact, the last report of the Interior Department on the sale of power for 1958 shows that the Pacific Gas & Electric Co. purchased more power from the Central Valley project at a cheaper price than all the power sold to public agencies.

Certainly this kind of arrangement cannot be called discriminatory against the private power companies. On the other hand, if the right kind of power intertie is built, it can help the Pacific Northwest, in fact, help the entire Pacific coast make maximum use of the resources in which Government has invested millions of dollars. It would be an utter shame and a discredit to the Federal Government to permit the kind of power grab proposed by this agreement to the long-term detriment of the Nation's taxpayers.

I urge this committee to direct the Secretary of the Interior not to execute this ill-conceived, hastily compiled proposal even though there may be momentary losses to the Federal Government by wasted additional power. There will be a much greater return to the Nation if these Interior Department Agencies are directed to make a thorough study of the problem and make it in cooperation with the three States which have already announced their concern and determination to work jointly in a solution of it.

The full facts in full power view should be available before the Government takes action, and certainly they should not approve some agreement proposed as a result of the fast footwork of some private power companies looking out for their own personal, private interest.

Senator KUCHEL. We have a statement from Hon. Al Ullman, Member of the House of Representatives from Oregon, to be inserted in the record. It will be followed by telegrams from Harry H. Hudlow, manager of the Franklin County PUD, Pasco, Wash., and Ernest De Steffno, of the Pittsburg, Calif., Democratic Club. Also received is one from M. W. Kay, manager of the Ferry County, Washington, PUD. That, too, will be printed.

STATEMENT OF THE HONORABLE AL ULLMAN, MEMBER OF THE HOUSE OF REPRESENTATIVES FROM OREGON

Chairman Anderson, I wish to thank you for this opportunity to present my statement to the Subcommittee on Irrigation and Reclamation. The California intertie is a matter of great importance to the Columbia River Basin States and we who represent this region are most appreciative of the subcommittee's interest in this project.

Mr. Chairman, the construction of a high voltage grid for the transmission of surplus Bonneville power would offer both California and the Columbia Basin many advantages. The operation of such a transmission line would assure power-hungry California residents of additional low-cost power during the summer months. It would help alleviate that State's expensive reliance on oil as a source of power.

Equally important are the benefits which would accrue to the Pacific Northwest. As members of this subcommittee are well aware, the Bonneville Power Administration last year witnessed its first financially unsuccessful year of operations. Yet, had a high voltage transmission line been in operation, this deficit would have been turned into a sizable surplus—and California would have reaped the benefits of wasted surplus power. When we recall that the time is rapidly approaching for a review of Bonneville Power Administration's wholesale rates, it is not difficult to understand the importance of this additional revenue.

Mr. Chairman, I want to make it absolutely clear, however, that I do not approve of the present negotiations being carried on between the BPA and Pacific Gas & Electric of California. I strongly object to their proposals for a small regional private power company interconnection because such plans are both inadequate and premature.

We need a comprehensive study both as to the engineering and the economics of the problem before we launch out on this all important program.

Funds should be made immediately available so that the Bureau of Reclamation and the Bonneville Power Administration can conduct the studies and surveys required. When the essential technical information resulting from such studies is forthcoming, we will then be in a position to make the decisions on both the engineering and economic aspects of the problem.

We should not be unaware of the fact that California's mushrooming population will create vastly expanded power demands. To adequately protect the Pacific Northwest from any possible future encroachments on our power supply by California interests, we need safeguards fully agreed upon at the time the intertie is constructed.

I urge the committee to act expeditiously on the recommendation for an early and a comprehensive study of this most important problem. Until the results of such a study are available, I strongly believe no intertie should be constructed.

PASCO, WASH., *April 8, 1959.*

CLINTON P. ANDERSON,
Senate Office Building, Washington, D.C.:

We support California full intertie and urge appropriation to investigate its possibility. We can see immense benefits to both California and Bonneville Administration Service area.

HARRY H. HUDLOW,
Manager, Franklin County PUD, Pasco, Wash.

PITTSBURG, CALIF., *April 10, 1959.*

Senator CLAIR ENGLE,
U.S. Senate, Washington, D.C.:

Pittsburg (Calif.) Democratic Club in accord with resolution advising Secretary of Interior to withold action by his department or by the Bonneville Power Administration on the Pacific Northwest intertie until the Tri State Committee and the Senate subcommittee have completed their investigation and made their reports.

ERNEST DE STEFFNO.

REPUBLIC, WASH., *April 6, 1959.*

Senator CLINTON P. ANDERSON,
Chairman, Subcommittee on Irrigation and Reclamation,
Senate Office Building, Washington, D.C.:

This district strongly in favor of California entry. Urgently needed for Pacific Northwest in order to dispose of surplus secondary power thereby averting BPA rate increase.

M. W. KAY,
Manager, Ferry County PUD No. 1.

Senator KUCHEL. Proceed, Mr. Kronick.

STATEMENT OF STANLEY W. KRONICK, APPEARING AS SPECIAL REPRESENTATIVE OF THE GOVERNOR OF CALIFORNIA

Mr. KRONICK. My name is Stanley W. Kronick. I am appearing here as a special representative of Edmund G. Brown, Governor of California. The comments I make reflect Governor Brown's views.

You have for inquiry the matter of a proposed agreement between the Bonneville Power Administration and the Pacific Gas & Electric Co. of California for the furnishing of a portion of the available surplus power to the company. This involves a matter of much concern to California. Our State has long been interested in the possibility of an arrangement whereby it might be in a position to utilize some of the electric energy which might be available in the Northwest at any given point of time.

In this connection, I wish at the outset to emphasize that California is interested only in power which actually is surplus to the needs of the Northwest. We recognize that we are not in the primary service area of Bonneville Power Administration and that whatever use of power we might obtain must be subject to the prior claim of the area in the Northwest for which it was originally intended.

However, as I have stated, California has long had an interest in this subject. Recently its interest has been increased by two sets of circumstances. First, as you know, we are embarking, in conjunction with the Federal Government, and independently, upon a vast water resource development program.

This program, the first phase of which includes the San Luis unit, with respect to which Governor Brown appeared before you last month, will require large amounts of energy for project pumping. It presently appears, subject to further detailed study, that the surplus power from the Pacific Northwest would be of great assistance to us in our program, even if it is available only on a temporary basis.

In addition, there is a tremendous potential demand for additional power by public and private agencies in California. This power utilization in California would at the same time be of great financial benefit to Bonneville Power Administration, the Pacific Northwest and the taxpayers of the United States generally.

The second factor which has renewed our interest has been the invitation of State and other interests in Washington and Oregon to participate with them in exploring ways in which the surplus power from the Northwest could be utilized in California.

In furtherance of this, Governor Brown has designed a representative to serve with the Pacific Coast Power Coordinating Committee, an organization of representatives of publicly owned utility groups, and the States. In addition, our Governor was asked to send representatives to a meeting attended by representatives of the Governors of Oregon and Washington. This latter group, which is also interested in and plans to conduct a study of a Northwest and California power exchange, is now active and has been designated as the Pacific Coast Governor's Power Committee.

The committee has concluded that the three States should undertake a cooperative study to ascertain whether an interchange is feasible and the extent to which maximum utilization and benefits to

all areas could be accomplished. Legislation has been introduced in California to appropriate funds for this study.

We became deeply concerned when we learned that Bonneville Power Administration contemplated entering into an agreement for the sale of power exclusively to the Pacific Gas & Electric Co. without any consultation with the State or public power agencies in the State. We also were surprised by the coincidence that the announcement of the agreement came so shortly after the three States had declared their interest in the subject. And even more, we were disturbed that it would be contemplated before all of the factors became known as to the most effective manner in which the power could be utilized and the maximum financial benefit could be achieved.

We wish to make our position abundantly clear. We do not at this time state that no agreement should be executed which could make some of the energy available to the Pacific Gas & Electric Co. We do not feel that action should be taken which might result in the company being the sole beneficiary insofar as the use of the power is concerned. Preliminary studies indicate that the intertie proposed is inadequate. Further, we are concerned because the agreement contemplated contains no common carrier or wheeling provisions. Consequently we feel that the proposed contract should not be executed.

We in California feel that, upon the conclusion of the studies which will be conducted, it will be found that a manner of handling this can be developed which will be of benefit to the private as well as public utilities, and, moreover, will be of maximum benefit to the Nation as a whole because it will mean optimum resource development.

Preliminary examination indicates that this could be achieved if we have an intertie of sufficient capacity which can be used as a common carrier. We urge that no arrangement be entered into at least until the preliminary stage of the study we contemplate has been completed. We are convinced that at the present time no one has all of the facts upon which an intelligent judgment or decision can be based.

We understand the anxiety of the Northwest to effect an intertie promptly. However, we respectfully point out that inadequate handling of this matter could result in considerable waste of both power and revenues in the long run. We urge that this committee recommend to the Department of the Interior that the proposed contract between the Pacific Gas & Electric Co. and the Bonneville Power Administration not be executed.

Senator KUCHEL. Thank you, Mr. Kronick.

Let me ask you this: Have you studied this contract? Have you seen the proposed agreement?

Mr. KRONICK. We have not seen the proposed agreement to date.

Senator KUCHEL. Yesterday there was some apprehension expressed here by not only members of the committee but others that this was a contract that could not be terminated if a preference agency indicated its desire to purchase part of the energy on which this contract itself would operate.

That at least has been cleared up now by the statement of the representatives of Bonneville and the representatives of the gas company to the extent that apparently there is no question that the contract could be terminated by the Administrator at his sole discretion.

Does that fact in and of itself change any of the views of the State with respect to the negotiation?

Mr. KRONICK. No, not all all. I don't think so. Because the State feels that even though the contract may be terminated, it isn't an economic thing to do; it isn't a practical thing to do, if the company installs this line as it intends doing.

As a matter of fact, it would be doubtful if our studies indicate that a much larger line should be installed there rather than the one we consider to be inadequate that they should proceed at all with that line.

To require them after several years of operation not to continue any longer would be unfair to them. And it is doubtful that it would ever occur.

Senator KUCHEL. Now with respect to the study which the Administration has requested and for which legislation appropriating the necessary moneys is pending in the legislature, this could be a cooperative study with the other two Pacific Coast States, would it not?

Mr. KRONICK. Yes, sir.

Senator KUCHEL. And apparently with a new organization of public agencies in the three States?

Mr. KRONICK. It would be a cooperative study among the three States.

Senator KUCHEL. What, in your judgment, would be the necessary time in which a feasible inquiry were to be made?

Mr. KRONICK. It is the feeling among representatives of the three States that a study indicating what possible future may be taken—what possible action may be taken in the future—could be done in approximately 6 months.

Senator KUCHEL. So that what you are asking this committee to do is to request the Department of Interitor to delay further proceedings in the negotiation of this contract until on or about 6 months from right now?

Mr. KRONICK. Yes. Until we have this study completed, we feel that it should not be pursued and the contract should not be executed.

Senator KUCHEL. Let me ask you this: With respect to the development of the State water plan, the progress that is being made now in Sacramento, the progress that I think is going to be made here in Washington in connection with that, what provision has been made by the State with respect to the power necessary to sustain that State system, and particularly the Feather River project portion of it? Does the State contemplate generating some of its own electric energy?

Mr. KRONICK. It contemplates generating some of its own electric energy, particularly at Oroville. But also considerable power will be required from other sources. And we look upon this intertie as a possibility for the State to obtain energy for use in its works that will be constructed.

Mr. Gerdes indicated that we will not be requiring any power until 1970. That may be true so far as pumping requirements over the Tehachapi area is concerned, but power will be required perhaps as early as 1960 if the south bay aqueduct is constructed.

Senator KUCHEL. When you mention the south bay aqueduct, are you talking about a segment of the State water plan?

Mr. KRONICK. That is a segment of the State water plan, yes.

Senator KUCHEL. So that the necessary power to operate the State's system in segments, as those segments may be completed, will come from the State generating some of that power itself; and, second, from the State exercising its rights as a preference customer with respect to Federal reclamation projects; and there it is in your thinking that the tie-in would bring this surplus power to the benefit of the State at the time that these segments come into existence?

Mr. KRONICK. That is correct, Mr. Chairman.

And further, these letters to Mr. Bellport, of the Bureau of Reclamation, in Sacramento were sent by Mr. Banks inquiring as to the availability of power from the Central Valley project. And we received a reply in the negative, that there is no surplus power available for us from the Central Valley project.

So we have to look to other sources for our power. And we look upon this intertie as a good possibility.

Senator KUCHEL. Does the State contemplate firming up its own energy with respect to Oroville?

Mr. KRONICK. By steam plants?

Senator KUCHEL. Yes.

Mr. KRONICK. The plans have not fully been worked out yet.

What we are asking for here, Mr. Chairman, is time within which to work out these studies and obtain the facts on which some judgment can be made as to the feasibility of this intertie so far as the States of Washington, Oregon, and California are concerned.

It appears to us that on the basis of the availability of surplus secondary energy exhibit which Doctor Pearl introduced yesterday that in those critical times of the year during the months of May, June, July, and August, substantial amounts of power will be available from the Bonneville plant which could be utilized in California. Those are critical periods of the summer months in California, and there is a substantial block of power that could be made available a hundred percent of the time from Bonneville.

Senator KUCHEL. Turning to page 3 of your prepared statement, you say in part in that first paragraph there "We were also surprised by the coincidence that the announcement of the agreement," meaning the Bonneville-Pacific Gas & Electric Co. agreement, "came so shortly after the three States had declared their interest in the subject."

Let's develop that just a little bit, Mr. Kronick.

When approximately did the three States declare their interest in the subject?

Mr. KRONICK. That was during the latter part of January, I believe.

Senator KUCHEL. And how was that declaration made? Was it made in public announcements?

Mr. KRONICK. In public announcements by the Governors.

Senator KUCHEL. By the three Governors of the three States?

Mr. KRONICK. And letters addressed by Governor Brown to each of the two Governors of Oregon and Washington.

Senator KUCHEL. And that date was what?

Mr. KRONICK. The latter part of January, as I recall it.

Senator KUCHEL. For the record, because I don't know that we have them here, would you on your return furnish for this record copies of that correspondence?

Mr. KRONICK. I will; yes.

Senator KUCHEL. And perhaps news releases, also.

Mr. KRONICK. Yes.

Senator KUCHEL. Now, when, roughly, if you can recall, was the announcement of the agreement made in California?

Mr. KRONICK. The announcement of the negotiation of the agreement occurred very shortly thereafter. I believe it was within a period of a week. I will also obtain that information for you, too.

Mr. LINEWEAVER. And we will put it in the record. And will you also put copies of the correspondence between Mr. Banks and Mr. Bellport in the record?

Mr. KRONICK. That has already been put into the record by Senators Engle and Kuchel.

Senator ENGLE. I offered that and the chairman permitted it.

Senator KUCHEL. Yes. That is in.

Senator Engle?

Senator ENGLE. Just one question.

I observe that you question the adequacy of the proposed tie-in line. Why do you do that in the light of the testimony by Dr. Pearl that these transmission facilities could transmit almost a billion kilowatt-hours?

Mr. KRONICK. We don't consider that that will anywhere near be sufficient to take care of the public and private agencies in California, as well as the operation of the State's projects. We feel that on the basis of very much preliminary reports, it is indicated that a much, much larger line will be required.

Senator ENGLE. And you think with 10 billion kilowatt-hours sitting up there in this surplus category that the lines ought to be bigger; is that right?

Mr. KRONICK. There is every indication that they should be.

Senator ENGLE. Thank you very much.

Senator KUCHEL. Thank you, Mr. Kronick.

Mr. KRONICK. Thank you, Mr. Chairman.

Senator KUCHEL. At this point there will be inserted in the record the statement of Hon. Wayne Morse, senior Senator from the State of Oregon, plus a covering letter from him to the chairman of this subcommittee making such a request.

(The statement and covering letter follows:)

U.S. SENATE,,
COMMITTEE ON LABOR AND PUBLIC WELFARE,
April 8, 1959.

Hon. CLINTON P. ANDERSON,
Chairman, Subcommittee on Irrigation and Reclamation,
Senate Interior Committee, Washington, D.C.

DEAR CLINT: Enclosed are copies of my statement in connection with today's hearings on the Pacific Northwest-California proposed intertie contract.

I would appreciate very much your including my statement in the record of the hearings on this matter. In my opinion, this subject is of tremendous importance to the Pacific Northwest and I hope that each member of the subcommittee will have an opportunity to consider the views expressed in my statement.

With best personal regards.

Sincerely,

WAYNE MORSE.

Statement of Hon. Wayne Morse, a U.S. Senator From the State of Oregon

Pacific Northwest-California Intertie Contract—Public Benefit or Private Electric Utility Windfall?

Mr. Chairman and members of the subcommittee, I appreciate this opportunity to submit a statement to the subcommittee on the subject of the proposed intertie contract now under consideration by the Bonneville Power Administration, the Pacific Gas & Electric Co., and the California-Oregon Power Co., because I am most apprehensive that this contract, if effectuated, might involve but another version of the Eisenhower administration's "partnership program" for the private electric utilities. In the past these partnership proposals have offered extravagant benefits for the private electric utility partners but very little for the partners who really count—the taxpayers of the United States.

I have no reason to believe that the administration has had a change of heart in recent years which would in any way alter its solicitous attitude toward the private electric utilities; therefore, I urge the members of the subcommittee to make a searching inquiry into all the ramifications of the intertie proposal now under consideration.

The California intertie should benefit all of the people

A remarkable coincidence resulting from natural winter conditions on the west coast presents the Federal Government with an opportunity to increase available power both in California and the Pacific Northwest by the simple device of joining their power systems through adequate transmission lines.

The diversity of characteristics of these two regional hydroelectric power systems makes possible an integration of surplus power that is unique in interbasin exchanges. The Columbia system of multipurpose projects reaches its peak amount of water in the summer when the rivers feeding the California hydroelectric systems are at their lowest flow. These conditions makes possible the exchange of benefits in both basins.

Let me put it this way: The moisture dropped by winter winds upon the coastal mountains falls as snow on the upper ranges in the area north of the California boundary. The melting of this ice and snow in the late spring and summer feeds the Columbia River system enormous quantities of water that exceed the storage capacity of the Columbia Basin multipurpose projects. This increased flow of water comes at a time of lowest use of power in the Pacific Northwest, but at that time the California basin has its greatest demand for power. Further south, the moisture carried by the coastal winds is deposited as rain on the California mountain slopes. Yet during those winter months of ample supply of rain, demand for power in California is at its lowest and demand in the Pacific Northwest is at its highest.

With the California hydroelectric system receiving its greatest amount of water form the winter rains, and with steam capacity standing idle, the California power pool could transport its excess kilowatts to the Northwest where it would help meet the peak winter demand. I am informed that studies already made indicate that the feasibility for such an interexchange by a high voltage transmission system represents a benefit-to-cost ratio of more than 5 to 1—almost three times higher than the benefit-to-cost ratio of any multipurpose project existing now, under construction, or proposed for construction.

With the foregoing in mind, I would like to take a few minutes to discuss what I understand to be the most important aspects of the proposed contract now being negotiated between the Bonneville Power Administration on the one hand and the Pacific Gas & Electric Co. of California and the California-Oregon Power Co. on the other hand.

Cream skimming by monopoly

The proposed 10-year contract between the private utilities and Bonneville Power Administration presents several matters that should be of deep concern to this subcommittee and to the entire Congress. I say this in all solemnity, because in this case we have before us the basic and serious question of how an important Federal asset—power generated at dams constructed with public funds—should be sold. It cannot be questioned that such a sale should be in the general public interest because, after all, the taxpayers of the United States through their investment of public funds made possible the creation of this asset known as generated electric power.

First, it has been reported to me that the proposed California intertie contract, if put into effect, would commit a portion of Bonneville "dump" power to the contracting private utilities for at least 10 years. Press reports indicate that the proposal would call for 20 miles of 230,000-volt line from Klamath Falls to the California boundary, then 70 miles of 230,000-volt line to Pacific Gas & Electric Pit River plant No. 3. If, as recent studies indicate, the Pacific Northwest will have an average surplus of energy of at least 3 billion kilowatts per year over the next 10 or 15 years, full development would call for a 345,000-volt line, and ultimately 460,000-volt line. The giving of special contract benefits to these privote companies to build a limited capacity transmission line would "skim the cream" from a highly beneficial full development that should be in the public interest.

Second, this proposed contract, I am informed, would enable the private utilities to amortize their investment in this small capacity line in a period of from 5 to 10 years. Transmission lines usually are amortized in a period of approximately 30 years. This demonstrates how tremendous the benefits would be for the private utilities under the proposed contract. Such benefits should be reserved for the people and not for the private electric utilities.

My third objection to a contract of this nature is based on the fact that such a line would not be a common carrier line, but would be a monopoly line. It would appear to me that this is another attempt on the part of private utility monopolies to gain control of power in the Columbia River Basin for private purposes, and to dictate the price of the power when sold. It is another scheme of the present administration to force its discredited partnership proposals on the Pacific Northwest. On this particular point, the subcommittee should make serious inquiry into the number of public distribution systems, such as municipalities, that have been brought into these contract negotiations. For that matter, it might be of real interest to ascertain whether the States that would be affected by the intertie have been drawn into the negotiation conferences.

While it is true that what is proposed here is the sale of surplus or "dump" power from the Columbia River system, there have been some fears expressed by groups in the Pacific Northwest that if the private utility monopolies construct this intertie, they would have a "foot in the door" for furthering their long-range plans of controlling the economic destiny of the Pacific Northwest. Of course, it is proper to sell "dump" power, but the making of such a sale should not serve as the excuse for a giveaway program that would saddle the taxpayers of the United States with a private utility contract that for all practical purposes would be of indefinite duration.

I would also object to this contract on the basis of reports indicating that the intertie line proposed here would be of insufficient capacity for the efficient interchange of surplus power between the two regions. Why should an inadequate line be built at all, and why by a private utility for a cream-skimming profit?

For these reasons, I would recommend that the committee give serious consideration to the advisability of congressional action directing the Secretary of Interior to suspend not only negotiations for such a contract, but also the granting of easements on public lands for erecting transmission lines for the private utility monopolies to construct the proposed interconnection.

Federal construction of inertie

It is my opinion that the Pacific Northwest-California intertie should be built immediately. Recent studies, including the one made by Consulting Engineer Sol E. Schultz, former Chief Engineer of Bonneville Power Administration, indicate that the Pacific Northwest will have an average surplus of energy of at least 3 billion kilowatt-hours per year over the next 10 or 15 years. This surplus power, which is available in the summer months, is urgently needed for irrigation pumping in the Central Valley of California. I have been informed for instance, that the Californria water plan not only will need the remaining hydroelectric power potential of California for water pumping purposes, but will, in addition, require some 6 million kilowatts of new steam capacity also for pumping. Since power developed at the Northwest plants is surplus chiefly during the California summer pumping season, a market for this "waste" power or "dump" power is assured. The 6 million kilowatts of new steam capacity also required will place California in a strong position to assure the Pacific Northwest of surplus winter steam capacity to help fulfill the Northwest power needs during a critical water year or winter.

California intertie proposal not new

Let me review for a moment a little of the history of the intertie. As far back as 1948, the junior Senator from California, Mr. Engle, then a Member of the House, introduced legislation designed to authorize it. In 1950, the Defense Power Administration issued a finding that the California interconnection would be in the interest of national defense.

In January 1951, Secretary of the Interior Chapman approved an agreement between the Bonneville Power Administration and the Bureau of Reclamation on methods of operating the facility.

Work on the Bonneville Power Administration end had begun in 1950, extending from Big Eddy, near the Dalles Dam on the Columbia, to Redmond in central Oregon. The Bureau of Reclamation began preliminary work on the California end of the line, but in 1952 the Bureau came under attack from congressional committees for having started the work without advance approval from Congress. Funds for the Bureau's part of the line were cut off.

In President Truman's 1952 budget, the intertie was recommended for construction to provide initially 100,000 kilowatts, an amount well within the capacity of the line then under construction from Redmond on to Klamath Falls. Funds for completion of the line down to Klamath Falls, 20 miles from the California line, were provided, but not the money for the California part of the intertie.

Then a new administration came on the scene.

The California Oregon Power Co., known as Copco, had been planned as the immediate beneficiary of the Redmond-Klamath Falls line. In order to make up a shortage of Copco power in the Klamath Falls area, Bonneville power would be delivered in exchange for delivery of surplus Copco power in Roseburg, on the western slope of the Cascades.

In February 1953, Copco still expected to receive Bonneville Power Administration power at Klamath Falls. The clearing of the right-of-way to Klamath Falls was almost complete, materials had been delivered to the site of the work, and 32.2 miles south from Redmond had been finished, when Copco abrupty changed its mind.

It was at that time that I happened to give a speech in Portland, and I predicted that what was in the wind was an arrangement whereby Copco would step in, take up construction of the rest of the line, and thus block the development of public power in Klamath Falls.

That was on a Friday night, I recall, and on the following Sunday the press carried reports that that was exactly what Copco wanted to do. That it succeeded was borne out when the House Appropriations Committee made the following statement on the subject in its report on the Interior Department appropriation bill:

"The committee has information which clearly indicates that expenditures for the Redmond-Klamath Falls lines cannot now be justified. The Secretary is requested, therefore, to terminate construction of this line at the earliest possible time and to salvage such materials as can be used elsewhere."

My comments on this sequence of events appear in the Congressional Record of June 22, 1953.

The result was that Bonneville Power Administration completed the line to Chemult, about halfway between Redmond and Klamath Falls; the right-of-way and the equipment for the rest of the line into Klamath Falls were turned over to Copco, and it built the rest of it essentially as had been planned by Bonneville Power Administration. The company reimbursed BPA in the amount of $2,895,834 for the land and equipment, covering the out-of-pocket cost to BPA.

The line was completed by Copco, which received about 50,000 kilowatts of power at Chemult. Of course, half the line had already been built by the taxpayers.

I am anxious that in realizing the achievement of the tieup between California and Northwest Pacific power surpluses, we do not channel the benefits of the tieup into the private utility pockets, as happened in the case of the Big Eddy-Klamath Falls line. The taxpayers and, indeed electric ratepayers, have suffered for years, and will continue to suffer financially because of this arrangement. We should profit by the hard-earned experience of the Chemult-Klamath Falls Bonneville line transfer.

The contract BPA is now considering with Copco and the Pacific Gas & Electric Co., I am advised, calls for the two private utilities to construct the line the remaining 20 miles to the California border; then 70 farther to P.G. & E.'s Pit River plant No. 3. The line would have a capacity of 200,000 kilowatts.

It would be another monopoly line. It would not be a public carrier of the public power generated at the Dalles Dam. Why should it not be a public transmission line?

Much of the power from the Columbia could be bought by public power agencies, by REA's, and eventually by the U.S. Government for operations in the San Francisco Bay area.

Why should any private utility get a rakeoff from public power sold to preference customers and Uncle Sam, or even to private purchasers, simply because they have arranged to own and control the lines carrying it into California? This line should be publicly owned and publicly controlled because the people of the United States made possible the generation of electric power to be carried on this line. I am fearful that if a smaller, preliminary line should be agreed to with Copco and P.G. & E., they will maintain a monopoly control over the entire intertie.

If the line is a public one, the private utilities will have the same opportunity to profit from its power as anyone else, but no more. Let us not compound and perpetuate the mistake made in selling the Big Eddy-Klamath Falls line.

More recent studies, such as one by Mr. Schultz mentioned earlier, submitted to the Public Utility Commissioner of the State of Oregon, indicated that a duplicate circuit line of initially 345,000-volt capacity and ultimately 460,000-volt capacity, would produce net income to BPA annually in the neighborhood of $8 million.

I am informed that last year BPA sent about 15 percent of its power potential over the spillways. The sale of this power would have meant some $9 to $13 million in additional revenue. The BPA report for fiscal year ending June 30, 1958, shows that gross revenues for that year fell about $5,200,000 below the estimated amount and increased only one-half of 1 percent over the previous year. It is interesting to note that the firm power sales and miscellaneous revenues during this fiscal year increased almost $4 million, but the dump or nonfirm energy sales dropped nearly $3½ million.

It should also be called to your attention that the Federal Government, which uses large blocks of power in the San Francisco Bay area for Mare Island Navy Yard, the huge Tracy pumping plants and many other large loads, could save tremendous sums of money for the United States Treasury by utilizing this surplus BPA power. It is obvious that the Bureau of Reclamation would benefit savingswise by such an intertie.

The construction of this high voltage transmission intertie as a common carrier line would not only save vast sums of money for the Government, but would enable the private utilities to achieve economies, increasing their firm load capacities and reducing their costs which, if they were so inclined, could be passed on to the consuming public. Several of the power curtailments and power shortages we have experienced in the Northwest could have been avoided if we had constructed the intertie years ago. In addition, the investment in transmission facilities would have long ago been amortized as a result of adding the equivalent of several Bonneville Dams for use in both regions.

In conclusion, I would strongly urge that this committee recommend sufficient funds for fiscal year 1960 to provide for construction of a 1,400,000 kilowatt capacity line. However, if the subcommittee in its wisdom should conclude that there is need for a comprehensive study to bring past studies of this intertie up to date, I would certainly support such a current study and would urge that funds be appropriated by the Congress to enable the Bonneville Power Administration and the Bureau of Reclamation to complete this study at the earliest possible date. After all, what we seek is to have "dump" power flowing over a California intertie line as soon as is humanly possible. If it should develop that engineering studies are not now available from Federal agencies indicating the annual charges and benefits, then those agencies should be instructed to complete cost estimates and estimated operating statements for at least 10 years and submit them to Congress in the shortest possible time.

I would add this word: In my opening remarks I expressed my concern over the monopoly features of the proposed contract between BPA, Pacific Gas & Electric, and the California Oregon Power Co., I would not want to leave the impression with the committee that Pacific Gas & Electric, for instance, should not be one of the beneficiaries of the intertie. Information I have indicates the company would receive many benefits if the line were constructed by the United States and, what is more important, the public would achieve the full benefits without the Northwest becoming a private utility monopoly company town.

Senator KUCHEL. Mr. Stark Fox, Western Oil & Gas Association.

STATEMENT OF STARK FOX, EXECUTIVE VICE PRESIDENT, OIL PRODUCERS AGENCY OF CALIFORNIA

Mr. FOX. Mr. Chairman, I would like to correct the record at the outset. I do not represent Western Oil & Gas Association. Arrangements for my appearance here were made by a representative of the Western Oil & Gas Association. I represent Oil Producers Agency of California.

Senator KUCHEL. Let the record be corrected accordingly.

Mr. FOX. My name is Stark Fox. I am the executive vice president of the Oil Producers Agency of California.

We do not include in our membership any of the so-called major integrated oil companies. The members of the association produce approximately 25 percent of the total crude oil produced in California.

I appreciate the opportunity to appear before this subcommittee. It permits me to point to some of the effects that the proposed delivery of surplus Columbia River power into northern California will have on the oil industry in California.

I heartily concur in the suggestion by Senator Jackson and others that a thorough study of this proposal be made. I suggest that in the public interest the matters that I propose to bring to your attention be given serious consideration in any such study.

An intertie will bring surplus Bonneville Power Administration hydroenergy into the northern California energy system each year during the summer period of April 15 to September 15. The intertie, however, in low streamflow years could not be depended upon as a firm winter supply.

As I understand the Bonneville-CVP proposal, a minimum of 3 billion kilowatt-hours delivered into Califorina annually will displace that amount of steam-generated power in the California system. This in turn will ultimately displace 5 million barrels of California residual fuel oil. A 1 million kilowatt capacity line at full capacity can displace approximately 12 million barrels of residual fuel oil.

The displacement of these quantities of residual fuel will not reduce requirements for imported foreign crude oil. Instead it will displace heavy crude produced by more than 1,000 small California producers, and may leave it permanently shut in. At least it will be shut in until the petroleum industry can justify the installation of expensive refinery equipment which will reduce its fuel oil yield.

Approximately 30 percent of the 859,000 barrels of crude produced every day in California is classified as heavy crude. These are crudes with an API gravity of lower than 20 degrees. Crudes of this type yield up to nearly 70 percent residual fuel oil compared with a much lower yield for light 36 gravity crude. Crudes of gravities immediately above 20 also yield substantial amounts of fuel oil. As a result of the large proportion of this heavy crude in California, fuel oil yields there averaged 28 percent during 1958, compared with only 10 percent in the area east of the Rockies.

During the past few years, with a rapid increase in demand for gasoline and other light products and a declining requirement for heavy fuel, California heavy crude production has been cut back and

crudes of lighter gravity from both domestic and foreign sources have been substituted for it.

It follows that the loss of a market for a minimum of 5 million barrels a year of residual fuel would not mean a drop of 5 million barrels in oil imports, but would probably mean a much greater loss in heavy California crude production. A loss of the potential 12 million barrels of fuel oil would obviously have effects nearly three times as serious.

Today in California, about 20,000 barrels daily of heavy crude production are shut in for lack of a market. The proposed intertie would simply further reduce the present market and add more weight to the burden now being carried by the California producer.

Most people, when thinking about oil producers, think only of the large integrated oil companies. Let me give you a little of the background of the oil industry in California. There are approximately 1,300 crude-oil-producing companies in California. Of these companies, 51 percent produce an average of less than 20 barrels per day; 80 percent less than 100 barrels a day; and 93 percent less than 500 barrels per day.

California crude oil is produced from approximately 37,000 wells, whose daily output averages only 23 barrels per well. Forty-nine percent of all wells in California produce 10 or fewer barrels a day. Much of the heavy crude produced in California comes from these low-output stripper wells owned by the very small companies.

When production from these wells is shut off, even temporarily, for lack of a market, it cannot be made up by increasing the rate after the wells may be returned to production. At best, it can only extend the producing life of the well, but in many cases the production is irretrievably lost, since the well must be abandoned.

The operation of these many marginal wells differs from that of wells in fields where the wells flow by themselves and production can be controlled by turning valves.

In marginal well operation, when pumping is stopped, a change takes place in the producing formations, and in many cases water encroaches, limiting future productibility. This, plus the deterioration by corrosion of the equipment, almost always make resumption of production uneconomic.

Although I represent only the independent crude producers in California I should like to comment on the west coast fuel oil situation from a marketing and refining viewpoint.

We producers cannot sell our crude production unless a market for the resultant product exists.

For the past 10 years, the west coast market for fuel oil has been steadily declining, because of two principal factors. First, the railroads—which 10 years or so ago used up to 47 million barrels per year of heavy fuel—have replaced steam locomotives with diesel equipment. In contrast, during 1958 the railroads' requirements were only 1 million barrels.

Second, large quantities of natural gas have been brought in by pipeline from other areas. This gas is supplied on an interruptible basis to industrial and utility customers at a price with which fuel oil cannot compete. During 1947, natural gas delivered to interruptible customers in California was equal to 36.5 million barrels of fuel oil. By 1957, this quantity had increased to 82 million barrels.

During the same period, residual fuel sales to the same type of

consumer dropped from nearly 35 million barrels per year to less than 27 million. Many, if not most, of these consumers use fuel oil only on a standby basis when, for instance, cold weather requires the diversion of all available gas to firm customers.

So far the oil industry has been able to supply this standby fuel. But obviously as the gas supply becomes greater, the swing from minimum to maximum requirements also becomes greater which means that standby requirements also increase. And it is a real question whether the oil industry can continue to maintain fuel oil manufacturing facilities if those facilities are to be used only for a standby fuel supply.

In fact, refiners have recently reduced their purchases of heavy crude and have constructed extensive catalytic cracking and coking facilities to decrease the yield of fuel oil and increase that of gasoline and other light products. Once this equipment is installed, however, the reduction in fuel oil supply is permanent. Thus a further decrease in off-season fuel oil requirements will in the long term add to the inability of the petroleum industry to meet short time peak fuel oil requirements.

Incidentally, since proposals to interconnect Columbia River power with California will not eliminate the need for standby steam facilities because they provide only interruptible power, they may well accelerate this trend. The result may well be that if or when fuel oil is needed to operate steam electric plants, it may not be readily available.

My convictions regarding any proposed intertie between Columbia River power sources and California are that any such project will not back out a single barrel of imported oil. Rather, any such intertie will back out California oil production to some degree, the degree being dependent upon the amounts of power involved.

The Bonneville-CVP proposal, for example, will back out at least 5 million barrels per year. At present, this volume of oil has a market value of about $9 million, which would be lost to the small California oil producer and the the State's economy. The potential loss is much greater, but a reduction of $9 million per year in revenue of the California oil industry is serious enough.

It will affect not only the independent producers, but will spread throughout the industry. Among the results to be expected are a decline in exploration and development activity, a decrease in employment in both the oil and its many allied industries, a loss of tax revenue to the counties of the State and to the State itself, and ultimately a decline in the State's ability to produce oil, a factor of considerable significance to the national security.

I have heard testimony at this hearing to the effect that the Bonneville Power Administration has power for sale and is trying to sell it. I have also heard that if sales are made, Bonneville Power Administration may not have to increase its present rates.

Both of these are admirable aims, but I submit that when they are at the expense of another segment of the economy—the California oil producer—the relative values and savings should be weighed.

For that reason, as well as for the many good reasons advanced by the members of this committee, I hope that a full-scale study of any and all proposed interties will be made.

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I urge again, and in conclusion, that in such a study the factors affecting the California oil producer be given real and thorough consideration. The California oil industry will be at your service in such an undertaking.

Thank you, Mr. Chairman and members of the committee.

Senator KUCHEL. Mr. Fox, you are an able advocate for a vital part of the economy of California.

Mr. Fox. Thank you, sir.

Senator KUCHEL. The theory that your government and mine must continue to operate on is the greatest good for the greatest number, if I can use a school phrase.

Mr. Fox. Agreed.

Senator KUCHEL. And the problem to this committee in making any recommendations to the Department of Interior—because that would be here the limit of our jurisdiction—must rest, I take it in what does constitute, in this instance, the greatest good for the greatest number.

Your industry has had its problems, I know. I hope my colleague and I and the California delegation may be of help to your people. This is not the first time this argument has been raised.

I recall just a few days ago sitting at this table when my colleagues from the State of Idaho were advocating the development of a reclamation project. And good citizens representing the coal industry came here and gave the same apprehensive admonition to the committee which you do for the California oil producer.

Is it not conceivable that placing the maximum output of power from this Bonneville project, either in Oregon or in California, in the long run might very well help stimulate new means for the purchase of fuel oils in our State?

Mr. Fox. Oh, certainly, Senator, if you phrase it that way, it is conceivable, certainly.

I would like to just comment that I am concerned here, or we are concerned here, with the ultimate effect or the effect that such a proposal adopted at this time might very well have on the ultimate recoverability of a natural resource, namely oil, in California.

Now I am not familiar of course with your reference to the people from Idaho and coal. I would suggest to you, however, that there is a little different—there must be a little difference in their position from the one that I am advocating, in that if you don't use the coal today, it will be there tomorrow. And I contend that if you don't use some of this oil, not all of it, but if you don't use some of this oil today, it is not going to be there tomorrow.

Senator KUCHEL. Well I think the contention which you make in page 5 of your statement certainly deserves a most careful consideration by whatever agencies are involved.

The point I make, however, is that it does seem to me that the basic premise of the people who spoke for the coal industry in Idaho would be the same position that you take speaking for the oil producers in California.

Mr. Fox. It may very well be.

Senator KUCHEL. And I simply must say that if the time came when the railroads of America changed from steam to diesel, with an unhappy adverse effect on the American oil industry, nevertheless if

that constitutes progress, as I believe it does, then that has got to be done.

I read these problems of automation. And I read what the pros and cons of the dislocation of the labor force is as a result of that. And I recognize that that apparently constitutes stresses and strains of this kind of an economy that we have. I did want to ask you this question, Mr. Fox, because I don't know the answer to it.

With respect to Federal projects, does the Buy American Act apply to their purchase of fuel oils?

Mr. Fox. I am subject to correction on this, Senator. I think that the Buy American Act does require the purchase of domestic products. I believe insofar as the oil products are concerned—and when I say "generally" I mean generally as to oil products.

Senator KUCHEL. Yes, sir.

Mr. Fox. But I believe—I am certain there have been some exceptions. And I believe that there may still be some. I think the best answer I can give you at this time without investigating the subject is that, in general, the Buy American Act does now apply to the oil business.

Senator KUCHEL. I am going to ask the staff if it can supply to the subcommittee at the time it considers this problem what the Buy American Act does cover.

Senator Engle?

Senator ENGLE. I take it that the quotas put on recently by the President doesn't affect the type of production you are talking about, Mr. Fox? That is, the President put some quotas recently on foreign imports.

Mr. Fox. Yes.

Senator ENGLE. That doesn't affect this particular type of production in California, does it?

I notice you say that the displacement of these quantities of residual fuel oils will not reduce requirements for imported foreign crude oil. I assume that that is going to be used for something else.

Mr. Fox. Yes, Senator Engle, the type of crude oil being imported into the Pacific coast, which under the President's program is known as district 5, is light crude. It is brought in primarily for the purpose of the manufacture of gasoline and other like products.

I should say that the quality of crude that is brought in is not specified under the import program. But in fact the quality of crude that is brought in under the total quota and by each company within its allocation is light crude.

Senator ENGLE. The point I got from your statement was that the reduction of the use of residual fuel oil would react directly against the California producers and not against foreign importations.

Mr. Fox. That is precisely the point.

Senator ENGLE. Thank you very much.

Senator KUCHEL. Thank you, sir.

Mr. Fox. Thank you.

Senator KUCHEL. The next witness will be Mr. Owen W. Hurd, Washington Public Power System.

STATEMENT OF OWEN W. HURD, MANAGING DIRECTOR, WASHINGTON PUBLIC POWER SUPPLY SYSTEM

Mr. HURD. In the interest of saving some time here, if it is satisfactory with you, I would like to enter for the record my prepared statement and summarize very briefly.

Senator KUCHEL. Thank you very much, Mr. Hurd. It will be set forth in full.

Mr. HURD. I would like to explain my own identification with this matter. I am presently managing director of the Washington Public Power Supply System, a group of public utility districts in the State of Washington that have organized for the purpose of providing a future power supply to supplement their present supplies from the Federal system in the future. We are, therefore, a planning organization and are presently engaged in investigation of some hydrosites which may result in additional surplus power and seasonal power.

I have also recently participated in an organization that has been referred to here before, the Pacific Coast Power Coordinating committee. This is an organization, a voluntary organization, of public agencies along the Pacific coast.

The incentive for such cooperative action and getting together on the part of public agencies came shortly after the customer meetings that Dr. Pearl held with his customers, including the 75 public agencies in the service areas, and announced their recognition of the need for marketing this surplus power and the possibilities of a market in California.

We felt that in order to understand the problems and the viewpoints and the resources that might be involved in this particular thing that it would be well for the public agencies to get together and discuss it.

And it is on that basis that the public agencies in California, Oregon, and Washington got together in January and organized this committee.

It included the city of Los Angeles, the Sacramento Municipal Utility District, and representatives of the 11 municipal systems in the bay area, as well as the cooperatives in Oregon and Washington and the public utility districts and the municipalities in those States.

Soon after we began these decisions, we recognized the many problems involved and the need for thorough study of any proposal for an interconnection, and as a result of those conclusions we immediately urged Governor Brown, Governor Rossellini, and Governor Hatfield to take an interest in this matter, and almost immediately such an action was taken.

Not necessarily as our original thought, but no doubt it expressed the general concern in the Northwest in this subject.

Senator KUCHEL. When was this done generally?

Mr. HURD. On January 23 we met in San Francisco for the first time. We have held additional meetings since then.

I won't labor the record on the information of the quantities of power. We do feel in addition to what has been spread in the record here that an extrapolation of the power supplies, future power supplies, will reveal a continuing surplus even after the 10-year period.

And that could constitute a very definite and additional incentive for an arrangement which has been considered in the present proposal.

We think that this whole subject of how much it is going to be after that time is a subject that needs further investigation and discussion.

In the Northwest, we have recognized that there is very limited market for the class of power that Dr. Pearl has described. I am sure that we will all be very aggressive in trying to develop fully the potentialities of such a market.

But they appear to be rather limited. Industry generally is not interested in the class of power that we are talking about. And we also recognized that the exports by other interconnections to the Missouri Valley, to Idaho, and to British Columbia, are quite limited as compared to the potential market that exists in California.

We thought that it was—we were all glad to hear from Pearl's expression of interest in exploring this proposition. And I think that he has contributed a great deal by exploring this particular means of marketing power.

But we do not agree that that is the only possibility for marketing this power, nor is the limit to which these particular facilities should be the limiting factor on this thing.

It is for that reason that we certainly urge that further studies be made by the Federal agencies involved, by the States and by the utilities.

And we think that these studies can proceed very rapidly if there is proper type of cooperation on the part of all concerned.

I see no reason why they can't be finalized to the point where the delay that might occur will be more than offset by the benefits that a full investigation will determine.

That generally summarizes our position, Senator.

(The prepared statement of Mr. Hurd, is as follows:)

PREPARED STATEMENT OF OWEN W. HURD, MANAGING DIRECTOR, WASHINGTON PUBLIC POWER SYSTEM

Mr. HURD. My name is Owen W. Hurd; I live in Kennewick, Wash.; I am Managing Director of the Washington Public Power Supply System and chairman of the Pacific Coast Power Coordinating Committee and represent both of these organizations at this hearing.

On behalf of these organizations, we wish to express our appreciation for the interest displayed by the committee in holding timely hearings on the matter of the California intertie and for the opportunity to present our views on this important matter.

The Washington Public Power Supply System is a municipal corporation organized under the public utility district-joint operating agency laws of the State of Washington whose membership presently includes 13 of the 21 operating public utility districts in the State. The purpose of this organization is to provide a future low-cost supply of power for its members to supplement power obtained from Federal plants and their own resources by the construction and operation of hydro and thermal plants and such transmission lines as may be required for coordination with the Federal grid system.

Since its organization in 1957, the supply system has received a preliminary permit from the Federal Power Commission for the investigation of the Packwood Lake project in western Washington and has applications for preliminary permits pending for the investigation of the Ben Franklin project on the main stem of the Columbia River and a project on the Hoh River in the Olympic Peninsula. Other projects are also being considered for future investigation and construction, if feasible, by our organization.

The Washington Public Power Supply System has a definite economic interest in the proposal for an interconnection between the Pacific Northwest and California systems for the following reasons:

1. Revenues from the sale of surplus and waste power by BPA to California markets would give major assistance in maintaining the present BPA rates in face of the present deficits and increasing costs.

2. The tieline, if operated as a common carrier, could result in a market for seasonal and secondary surplus power which will be available from future plants constructed by our organization and its members as well as surplus energy from other non-Federal plants. This would result in a lower unit cost for energy used by our members.

3. As preference customers of BPA, our members are concerned with policies and arrangements made by the Federal Government which would in any way affect the cost, conditions of service, or availability of power from the Federal system.

At this hearing, I am also representing the Pacific Coast Power Coordinating Committee, a voluntary committee representative of publicly owned electric utilities in the three Pacific Coast States, including municipalities, REA cooperatives, and public utility districts. This committee was formed for the purpose of providing a means of exchanging information and viewpoints of the interested groups of publicly owned utilities of the three States in an interconnection of the Northwest and the California electrical systems by means of transmission lines in a manner which would achieve maximum benefits.

Whereas the public agencies of the Northwest are concerned with the disposal of a maximum amount of surplus and waste power in a manner which will not adversely affect their firm supply of power, the California public agencies are equally concerned that Federal and other power made available in California over a regional interconnection be marketed in a manner which would prevent its monopolization by the P.G. & E. and assure an equitable distribution of benefits.

Discussions and study of the problems involved led this committee to recommend that a comprehensive study be made of all facets of the problems involved by State and Federal agencies in cooperation with all electric utilities of the Pacific Coast States.

Previous studies and available data on the loads and resources of the Northwest and California systems substantiate the conclusion for a need for a major interconnection between the Northwest and California systems because:

1. It would permit the best utilization and maximum conservation of the energy resources of both areas. Due to the hydro characteristics of the Northwest, this area presently has large quantities of surplus energy in excess of the firm loads of the Northwest. These quantities will be available in increasing amounts until the Northwest loads exceed available firm hydro resources and thermal energy is required in substantial quantities to supplement the hydro supply.

2. The market for seasonal and interruptible power for industrial and other uses in the Northwest is limited and experience to date indicates that it is not likely that any new large use of this class of power will occur in the Northwest. The interconnection between the Northwest and California systems offers the most attractive opportunity for utilization of Northwest surplus and waste energy.

3. A tieline of optimum capacity would serve the dual purpose of providing the means of utilization of Northwest waste hydroenergy and increasing the dependable capacity of both regions due to the diversity of loads and resources between the areas.

4. The quantity of thermal energy now in use in northern California provides an adequate market for large quantities of Northwest surplus and waste hydropower and a resulting saving in unreplaceable fuel.

5. The present and expected fuel cost and value of Northwest surplus hydroenergy is such as to create an economic incentive for the contractual arrangements necessary for the financial feasibility of the required facilities.

6. The potential value of the interconnection in relation to national defense was recognized by the Defense Electric Power Administration and resulted in an earlier study during the period of Northwest power shortage. A major tieline of maximum economic capacity would make an important contribution to strengthening the Pacific Coast power supply in terms of energy needs for national defense purposes.

Although these are compelling economic and practical reasons for a major interconnection between the two regions, a number of major problems exist which deserve careful recognition and analysis in order to insure maximum overall benefits from such a regional interconnection. We believe that before any arrangements or authorization for an interconnection are made, a thorough study should be made which would, among other things, include the following:

1. Short- and long-range estimates of the loads and resources of the two regions, including estimates of imports from Canada and other regions of the United States.

2. An analysis of the facilities required for various levels of integration and energy transmission between the two systems for maximum economic utilization of Northwest surplus power.

3. Analysis of potential use of an interconnection as a common carrier in the transmission of Federal and non-Federal power for sale and interchange.

4. Analysis of the contractual arrangements required which would prevent monopolizing the interconnection and result in maximum benefits to Federal, non-Federal public agencies, and private utility companies alike.

5. Determine a schedule for the installation of facilities which would result in optimum benefits.

As the results of the widespread attention to a Northwest-California interconnection, the States of California, Oregon, and Washington have indicated their interest in undertaking a study to determine the needs and feasability of such an intereconnection. In the absence of adequate technical and economic information required to base a conclusion as to the scope and requirements for a regional interconnection, we are opposed to the consummation of any arrangements of the type presently being considered by BPA and P.G. & E. for the following reasons:

1. In view of the interest of the States of California, Oregon, and Washington in making a study of the interconnection and in the absence of adequate engineering and economic information, it would seem premature to attempt to judge the merits of the present proposal.

2. The terms of the agreement may be in serious conflict with the conclusions of a comprehensive study of the type recommended.

3. Any temporary benefits from the early construction of the proposed facilities required for a tie-line of optimum capacity.

4. To our knowledge, the present proposal has been arrived at without adequate consideration of the interests of the public agencies in the regions in the BPA service area or in California.

5. The proposal appears to have completely ignored the possible benefits of integration of the Central Valley projects and the BPA system.

6. Since the capacity of the proposed interconnection is limited to approximately 200 MW, it would be inadequate to serve the expected requirements of an intereconnection for the marketing of an optimum amount of Federal power or to serve as a common carrier for Northwest non-Federal surplus capacity and energy.

It is our recommendation, therefore, that Federal and State agencies undertake as promptly as possible a comprehensive study of the Northwest-California tie-in cooperation with the public and private utilities of both regions and that no interconnection be made until the results of such a study are made known.

Senator KUCHEL. I see there are two gentlemen from Washington who can speak directly for the Governor of your State.

Mr. HURD. Yes.

Mr. Coe has already appeared here. And Mr. Francis Pearson, Chairman of the Public Service Commission is here.

Senator KUCHEL. Your view generally is that which was expressed by the representative of the California Governor.

Senator Engle?

Senator ENGLE. Thank you very much for your statement.

Senator KUCHEL. Vincent M. Cleaveland, Northwest Public Power Association.

Proceed, Mr. Cleaveland.

STATEMENT OF VINCENT M. CLEAVELAND, NORTHWEST PUBLIC POWER ASSOCIATION

Mr. CLEAVELAND. Like Mr. Hurd I will also summarize my statement.

I am Vincent M. Cleaveland, manager of the Clark County Public Utility District, Vancouver, Wash. We serve approximately 100,000 people with low-cost power in Clark County, which is located on the north bank of the Columbia River just across from Portland, Oreg.

I appear also in my capacity as president of the Northwest Public Power Association, which comprises 103 public and cooperative power distribution systems in Alaska, Montana, Idaho, Oregon, and Washington—servicing about 2 million people.

Our systems have a vital economic concern in the transmission line intertie between the Columbia River and California. Last year we paid into the Treasury of the United States about $25 million for electricity purchased from the Federal power dams. As an example, the utility of which I am manager, the Clark County Public Utility District, paid to the Bonneville Power Administration $1,680,000 for the wholesale power during the calendar year of 1958.

We are grateful to you for granting us this hearing, which we requested. In testimony submitted for our association on February 16, 1959, Mr. Gus Norwood, our executive secretary, urged that a hearing be held on the proposed interconnection between Columbia River power system and the Central Valley project.

I regret that he is not able to be here today to express his appreciation. We both thank you for holding this hearing. We have two recommendations. First, that the Committee on Interior and Insular Affairs advise the Committee on Appropriations of the desirability of appropriating $100,000 each to the Bureau of Reclamation and the Bonneville Power Administration for conducting a joint investigation and study of the proposed interconnection between the Columbia River power system and the Central Valley project and to report thereon to Congress not later than December 31, 1959.

Secondly, we respectfully recommend that the Committee on Interior and Insular Affairs advise the Secretary of the Interior to suspend negotiations for any contract or granting any easements for correcting transmission lines over public lands as the basis for Pacific Gas & Electric Co. and the California-Oregon Power Co. to construct the proposed interconnection.

By the same token, the committee should advise the Federal Power Commission not to grant any license, license amendment, or permit for the construction of interconnection. Also we urge that the Secretary suspend the negotiations between the Bureau of Reclamation and the Pacific Gas & Electric Co. to renew the integration contract which expires in 1961 and which vitally affects the intertie.

As a result of attending these hearings I would like to comment first that I am in favor of Bonneville selling power. That is simply a matter of good business.

At the same time I think that our people in the area should be satisfied that the area's first rights to this power are amply protected.

Further, I think that Bonneville should build is own lines. I don't think that it should sell its lines. It is difficult for me to understand

why on the one hand we would be selling our Bonneville lines and within a few years renting them back. I think that this meeting proves that the——

Senator KUCHEL. Well, would you expand on that a little bit? What do you means by that, Mr. Cleaveland, that Bonneville would be selling its line and then renting them back?

Mr. CLEAVELAND. The line that Copco was proposing to wheel part or all of this power over was sold to Copco just a few years ago after the Congress had appropriated the funds to build it.

Senator KUCHEL. I understand, yes.

Mr. CLEAVELAND. I think, then, in conclusion, that this meeting proves that before we proceed any further, we should have a good study and a good understanding by all of the people in the Northwest and in California as to just exactly what is involved.

I have one more thing that I would like to do, sir.

I have a statement from Mr. Lee Wooden which I received in the mail, who is president of the Oregon Rural Electric Cooperative Association.

Senator KUCHEL. That will be received and made a part of the record.

(The statement of Lee Wooden follows:)

STATEMENT OF LEE WOODEN, PRESIDENT, OREGON RURAL ELECTRIC COOPERATIVE ASSOCIATION

The Oregon Rural Electric Cooperative Association consists of 15 member electric cooperative systems in the State of Oregon, which together have a total of 33,000 individual members, representing over 100,000 people in the State of Oregon.

Our members have a great and direct stake in the decision to build a transmission line from the Columbia Basin area to the State of California. By resolution adopted at our last annual meeting, on December 9 and 10, 1958, the association endorsed the construction of such a line. The resolution is as follows:

"We urge immediate and full investigation and preparation of plans looking toward the earliest feasible construction of one or more high voltage lines to interconnect the Columbia River power system and the Central Valley project."

Our annual meeting adopted another resolution, related to that above, which gives one of our reasons for supporting the construction of an intertie to the State of California:

"We urge the Bonneville Power Administration to conduct the fullest feasible investigation of its power marketing outlook for the next 10 years including the sale of secondary power in Canada, southern Idaho, Utah, and California as well as to interruptible loads in the Northwest, and that the BPA study the effect of proposed upstream storage dams on its firm power capability, and that it also study the possibility of revising its present method of computing the computed demand, all to the end that every effort to be made to retain substantially the present level of BPA wholesale power rates."

We are interested not only in having such an intertie built; we are vitally concerned that the terms of its construction be in the best interests of our members, as well as in the best public interest.

Briefly, we are opposed to the construction of a California intertie by any private electric utility and urge that this committee suspend negotiations between Bonneville Power Administration and Pacific Gas & Electric Co. which would enable P.G. & E. to build transmission lines to the Northwest. We are wholeheartedly in favor of appropriations for a study by the Bonneville Power Administration and the Bureau of Reclamation on the feasibility of the construction of a Federal high-voltage transmission line to the Central Valley project in California. We are confident that such a line will prove feasible, and that it is already desirable from the standpoint of securing an outlet for surplus power from the Columbia River system.

If a decision should be made to construct a Federal intertie, we would want to make sure that marketing agreements with California limited the sale of Columbia River power to power that is definitely surplus, after all Northwest needs are met. Favorable marketing agreements for the disposal of surplus power will be to the great advantage of our electric systems, which are wholly dependent upon Federal wholesale power supplies, by assuring that wholesale power costs to Northwest users can be kept at their present low rates. Since this hearing is to be limited to consideration of negatiations for private construction of the intertie, and to suggested appropriations for a Federal feasibility study, we will not elaborate at this time on the protective provisions that we feel should be attached to construction of a Federal transmission line.

I. *We are opposed to the private construction and operation of a high-voltage transmission system.*—As noted above, our 15-member electric systems in the State of Oregon are all totally dependent upon the Federal Columbia River power system for their wholesale power supplies.

Our rural electric cooperatives serve a definite antimonopoly function, in the public interest, in addition to providing power service to rural areas in the State of Oregon that were not served by private electric utilities prior to our organization. In creating the Rural Electrification Act and the Bonneville Power Act, Congress took into account the valuable contribution electric cooperatives could and would make in controlling the monopolization of the electric power industry by a few large and tightly organized private concerns. Through these acts, Congress provided the means—low-cost loans and the preference clause—for enabling the electric cooperatives to hold their own against the much greater economic power of the privately held companies. The result of these actions by Congress has been to secure for the people of our region the benefits of low-cost electric power. Customers of commercial power companies have benefited in substantial ways from the competition our cooperatives have provided to their power suppliers.

It is our firm opinion that construction of a transmission network from California by the Pacific Gas & Electric Co., for the purpose of obtaining surplus Federal power from the Bonneville Power Administration, would be in violation of the spirit of the antimonopoly clause in the Bonneville Act. Furthermore, we feel that private construction would gravely weaken our cooperatives by opening up the possibility that they might be dependent on the good graces of the operators of privately held transmission lines for future power supplies. This would not only violate the spirit of the antimonopoly laws, it would make those laws completely ineffective as far as we are concerned.

Here in Oregon, we have had direct experience with dependence on private power transmission of electric energy. We are not exaggerating when we say that the private utilities are able to find ample reasons for charging exorbitant wholesale rates to our cooperatives, far beyond the rates charged us by Bonneville Power Administration.

Oregon cooperatives are in a special position to object to construction by Pacific Gas & Electric of the California intertie, because the necessary transmission lines would be built right through our State. It is not only conceivable—it is likely—that our systems would have need to resort to the use of such an intertie for our own purposes at some future date, either for the disposal of surplus or for obtaining emergency power supplies.

II. *The construction of a Federal intertie is in the public interest and in the interest of our cooperatives.*—

1. Disposal of surplus Bonneville power supplies will help to keep wholesale rates to power users in the Pacific Northwest at the current level. At the present time, Bonneville Power Administration has surplus power in the summer months which could be used in the Central Valley system. If all of this power could be sold when it is surplus, the revenues added to the Bonneville system would more than compensate for higher production costs which BPA is using as an excuse to threaten higher wholesale rates to our consumers.

2. The construction of a Federal intertie from the Bonneville power system to the Central Valley project in California will be a major experiment in interregional transmission of power. In the future, especially, interregional power grids will be of increasing importance to our economic growth and national security.

3. Construction of a Federal tranmission line to the Central Valley project in California will enable the people of California to determine whether they want other forms of electric power distribution than they now have. This principle of self-determination which underlies all Federal power law is as appli-

cable to the people of California as it is to the people of the Pacific Northwest, and for this reason we support it as a matter of principle. It is our view that Federal control of such an interregional transmission grid will serve an important antimonopoly function in the State of California by bringing the preference clause into play over the sale of surplus Federal power in that State. It is evident that were Pacific Gas & Electric Co. to construct the line to the Columbia River power system, the preference provision could not adequately nor economically be brought into use in California.

4. Finally, we are confident that the study this committee authorizes will show that Federal construction of a high-voltage transmission line to the Central Valley project will be economically feasible and that Federal construction will be to the economic advantage of all participants (including Pacific Gas & Electric Co.) in the disposal of surplus Columbia River power. We are confident that comparative analyses will indicate that Federal construction of the tranmission line will result in lower cost power to all users, both public and private, than will private construction and operation.

(The prepared statement of Mr. Vincent M. Cleaveland is as follows:)

PREPARED STATEMENT OF VINCENT M. CLEAVELAND, MANAGER, CLARK COUNTY PUBLIC UTILITY DISTRICT AND PRESIDENT, NORTHWEST PUBLIC POWER ASSOCIATION

I am Vincent M. Cleaveland, manager of the Clark County Public Utility District, Vancouver, Wash. We serve approximately 100,000 people with low-cost power in Clark County, which is located on the north bank of the Columbia River just across from Portland, Oreg.

I appear here also in my capacity as president of the Northwest Public Power Association, which comprises 103 public and cooperative power distribution systems in Alaska, Montana, Idaho, Oregon, and Washington, serving almost 2 million people.

Our systems have a vital economic concern in the transmission line intertie between the Columbia River and California. Last year we paid into the U.S. Treasury about $25 million for electricity purchased from Federal power dams. As an example, the utility of which I am manager, the Clark County Public Utility District, paid to the Bonneville Power Administration $1,681,579 for wholesale power during the calendar year 1958.

We are grateful to you for granting us this hearing which we requested. In testimony submitted for our association on February 16, 1959, Mr. Gus Norwood, our executive secretary, urged that a hearing be held on the proposed interconnection between the U.S. Columbia River power system and the Central Valley project. I regret that he is not able to be here today to express his appreciation in person. We both thank you for holding this hearing.

RECOMMENDATIONS

We have two recommendations. First, that the Committee on Interior and Insular Affairs advise the Committee on Appropriations of the desirability of an appropriation of $100,000 each to the Bureau of Reclamation and the Bonneville Power Administration for conducting a joint investigation and study of the proposed interconnection between the U.S. Columbia River power system and the Central Valley project and to report thereon to Congress not later than December 31, 1959.

Secondly, we respectfully recommend that the Committee on Interior and Insular Affairs advise the Secretary of the Interior to suspend negotiations for any contract or granting any easements for erecting transmission lines over public lands as the basis for the Pacific Gas & Electric Co. and the California Oregon Power Co. to construct the proposed interconnection.

By the same token the committee should advise the Federal Power Commission not to grant any license, license amendment, or permit for the construction of the interconnection. Also, we urge that the Secretary suspend the negotiations between the Bureau of Reclamation and the Pacific Gas & Electric Co. to renew the integration contract which expires in 1961 and which vitally affects the intertie.

AUTHORITY FOR THIS STATEMENT

At its last business meeting on November 14, 1958, at Missoula, Mont., the board of trustees of the Northwest Public Power Association adopted the following resolution:

"INTERREGIONAL TIES

"*Resolved*, That we urge Congress to approve appropriations for construction of at least one Federal high voltage transmission line to interconnect the Columbia River power system and the Central Valley project, provided that the Federal system in neither region shall thereby be authorized to contract for the sale of power for more than 1 year: Be it further

"*Resolved*, That the association's 'A Consumer Power Policy' be amended by deleting the 11th paragraph of article XIII and by adding the following at the end of article VIII:

"Interregional interties.—We favor Federal high voltage transmission interties with all adjacent regions and Canada to facilitate the interchange of surplus power, increase the region's firm power supply and insure lowest possible power costs."

PRESENTATION OF EXHIBITS

Mr. Chairman, attached to this statement is an index of nine exhibits. The first five exhibits are reproduced and attached to each copy of the statement. Of the other four we are submitting our single file copy.

Exhibit No. 1 summarizes the historical information on the intertie. Exhibit No. 2 is our March 27, 1959, letter to Secretary of the Interior Fred A. Seaton in which we set forth our concerns on the wholesale rate picture of the Bonneville Power Administration. Obviously the construction of the intertie would improve the situation and help to prevent or hold off a wholesale rate increase. For my electric utility a rate increase of less than 6 percent would cost us $100,000 per year.

It is of special interest to me in going over our files to reread exhibits 3, 4, and 5 of April 1948, just 11 years ago. These consist of a letter from our association to Congressman Engle on April 17, 1948, second, the reply by Congressman Engle on April 24, and third, the copy of H.R. 6367 which Congressman Engle introduced on April 28 and which incorporates the safeguards which our letter requested.

These three exhibits not only show our long standing interest in the intertie but they continue to illustrate a sound approach to the situation which has withstood the test of time. Had this approach been followed 11 years ago we would have avoided several power curtailments and interruptions, we would have saved a lot of oil, the intertie investment would long ago have been paid back into the United States Treasury, and the financial picture of the Bonneville Power Administration today would be much better.

Exhibits 6 through 9 offer important historical information on the intertie.

JUSTIFICATION FOR OUR RECOMMENDATIONS

In our own minds we know that the Pacific Northwest-California intertie should be built immediately. Let me assure you that if we had the slightest hope that Congress would be able to approve construction to start this year, we would be here asking for authorization of the line as a new start. Our resolution urges actual construction.

However, the lessons of history caution us to a more gradual approach and therefore we are here for the purpose of asking only for planning funds without the Congress making any firm commitments as to construction. However, we think the report on the intertie should be ready by next January so that the Congress can then make a decision in regard to actual construction. This explains why our first recommendation is limited at this time to planning funds.

Our first recommendation includes suggestions for consideration of your committee and for the consideration of the Committee on Appropriations in regard to safeguards for the proposed intertie. These safeguards are necessary to allay certain fears with respect to the price and control of surplus power to be sold.

Our second recommendation urges your committee to ask the various Federal agencies such as the Forest Service, Federal Power Commission and the Department of the Interior to withhold approval for construction of any intertie by private interests. This line involves important public policies of monopoly and control.

THE INTERTIE HAS ENGINEERING AND ECONOMIC FEASIBILITY

The request for planning funds for investigation and study of the intertie is not for the purpose of determining whether the intertie would be economically and engineeringly feasible. We know now that it would be. The extensive reports of the Federal Power Commission and the Department of the Interior contain overwhelming evidence of such feasibility.

In fact, the most recent analysis dated December 1958, by Consulting Engineer Sol E. Schultz, formerly Bonneville Power Administration Chief Engineer, shows that all previous reports understate the economic and engineering feasibility.

For example, he indicates that a 230,000-volt line would be inadequate. Instead he suggests a 345,000-volt double circuit line as a real possibility. We further contemplate that the line should be constructed to specifications for 460,000 volts because later conversion to this higher voltage might be warranted.

May I point out that the Russians have a line of 400,000 volts with later provision for conversion to 500,000 volts already in operation between the Kuibyshev Dam on the Volga River and stretching 600 miles to Moscow. The Kuibyshev Dam has an installation of 2,300,000 kilowatts which makes it the largest hydroelectric power station in the world. The 600-mile line is in operation for continuous firm power. The 600-mile distance compares, for example, to the 530 miles between the Dalles Dam on the Columbia River and the city of San Francisco.

I am not saying that the intertie need be 530 miles long. The engineering and economic study might well show that it should be constructed in stages with perhaps the first stage being from Klamath Falls, Oreg., to the Pit River hydroelectric projects in northern California, a distance of about 90 miles. This portion of the line would close the existing gap and could be operated at 230,000 volts initially. The study might then show what should be the schedule for later stages for the construction of a second circuit and for going to higher voltage.

The job of the Government engineers therefore is to determine what kind of an intertie should be built and how and when it should be built.

As to economic feasibility, it goes without saying that the entire Federal investment would be on a self-liquidating basis. I am advised that the benefit-to-cost ratio of this line is higher than any dam that can be built in either region.

The intertie will be like adding several Bonneville dams, the use of which will be available to both regons.

LEGISLATIVE AUTHORITY FOR CONSTRUCTION EXISTS

The statutory authorty for construction of the intertie exists in section 2(b) of the Bonneville Act and in the reclamation laws. Thus both the Bonneville Power Administration and the Bureau of Reclamation have authority to build their respective portions of the line meeting at the California-Oregon border. All that is needed is appropriations.

Exhibit No. 9 consists of excerpts from the report of the Committee on Appropriations of the U.S. Senate dated July 12, 1957, which recognized the "interchange and interconnection" policy of section 2(b) of the Bonneville Act.

This policy has been recognized several times previously in regard to the interconnections at Blaine, Wash., with Canada, at LaGrande, Oreg., involving Idaho, and at Anaconda, Mont., involving Montana. All of these interconnections are sound. Tennessee Valley Authority and every other large power system in the United States demonstrates the wisdom of such interconnections.

It is noteworthy that the Federal Power Commission feels so strongly about interconnections that the Commission has recommended to Congress that the Commission be given authority to order such interconnections. Under section 202(c) of the Federal Power Act the authority of the Commission to order such interconnections is limited to war and emergency conditions and to temporary interconnections.

Although we are satisfied as to the legislative authority to build and operate the intertie, we feel that Congress should express certain policies perhaps as limitations in the appropriations bills or in the committee reports on the intertie appropriations. To illustrate what I have in mind there is attached at the end of my statement some proposed language which might be considered for the report of the Committee on Appropriations.

The chief policy which we suggest is the principle of regional preference to the use of power within each region, and secondly, we recommend that any contracts by any Federal agency involving the line should not be approved by the

Secretary of the Interior until he has given public notice and opportunity for public hearings. This will insure a chance to review any proposed contract.

INTERTIE IS IN THE INTEREST OF NATIONAL DEFENSE

In 1950 and 1951 the Defense Power Administration certified that the intertie would be in the interest of national defense. The national defense importance of an adequate supply of electricity has been demonstrated many times but has generally not been explained to the American public.

The power shortages of England during World War I were almost disastrous and resulted in action by the Conservative government in the early twenties to establish a national grid system.

Our own World War I experience was not entirely favorable but the studies were limited and resulted in very little publicity.

During World War II the importance of electricity was a little better understood. The Tennessee Valley Authority and Bonneville systems made dramatic contributions to the national defense because they were able to throw new power supplies into the gap. Our War Production Board found that next only to the supply of manpower the chief determinant in locating proposed defense plants was the consideration of electric power availability. European experience also showed clearly that electric power was a critical bottleneck in the war effort of each nation.

During our Korean effort the electricity situation came to the fore in connection with the needs for aluminum and titanium. A vast program of fast tax writeoffs was used to stimulate private power systems to increase their generation capacity.

The wartime experience of the utility industry demonstrates the necessity for a continuing surveillance by Congress over the adequacy of electric power supply for defense needs.

INTERTIE IS IN THE INTEREST OF CONSERVATION OF OIL

According to studies made by the State of Washington the amount of power which can be exported as fuel oil replacement at steam electric generating plants in California varies from a low of 2.2 billion kilowatt-hours to a high of 9.69 billion kilowatt-hours depending on the capacity of the line and the water conditions.

Taking 6 billion kilowatt-hours as a reasonable working goal, it is interesting to note that this translates, on the basis of 600 kilowatt-hours per barrel, into 10 million barrels of oil per year or the equal of one hundred 100,000-barrel tankers of oil per year.

The State of Washington study indicates for the 10-year period 1960–70 that a 600,000 kilowatt capacity line can save the Nation 54 million barrels of oil, a 1 million kilowatt line can save 80 million barrels, and a 1,400,000 kilowatt line can save 101 million barrels of oil.

GREAT FINANCIAL BENEFITS TO NORTHWEST FROM INTERTIE

Reliable cost data have not yet been compiled for the intertie. We are submitting as an example the following to indicate the approximate large amount of money involved.

If a 1,400,000 kilowatt capacity line could be constructed for $75 million, and the annual charges amount to 8 percent or $6 million, then the 10-year benefits for 1960–70 for sale of dump power at 2½ mills would amount to $177.5 million and leave a net income of $147.5 million or $14.75 million per year.

Since the Central Valley project would enjoy similarly large benefits, it would pay about half the costs. Other benefits would increase the net income further.

We hope that the Federal agencies will be able to lay before the Congress by the end of this year complete cost estimates and pro forma operating statement for at least the next 10 years.

INTERTIE ACCENTUATES ADVANTAGES OF POWER POOLING

Both the Pacific Northwest and California have had extensive experience in power pool operations and have developed considerable economies as a result.

Obviously the interconnection of these two great power pools would serve to accentuate these advantages. Especially large would be the diversity benefit because the Pacific Northwest has a winter peakload while California has a summer peakload. The opportunities for exchange of both capacity and energy are probably unequaled anywhere in the Nation.

MONOPOLY OVER THE INTERTIE CANNOT BE TOLERATED

Because of the importance of the numerous and large public benefits from proper operation of the intertie, neither region can risk monopolization by a private company. The Pacific Gas & Electric Co. is the largest electric utility in the United States. It represents the consolidation of some 520 electric systems. Pacific Gas & Electric already exerts tremendous political and economic power both in California and in national affairs. We do not want any Pacific Gas & Electric control over the Pacific Northwest.

Our second recommendation urges the Committee on Interior and Insular Affairs to ask for a suspension of the contract negotiations now in process between the Bonneville Power Administration and the two private power companies.

This is not to say that Pacific Gas & Electric should not be one of the beneficiaries of the intertie. That company would indeed receive much more benefit if the line were constructed by the United States.

Our concern relates not only to the monopoly problems but also to whether an adequate intertie would be built and whether the public would achieve the full benefits.

The monopoly problem in connection with Pacific Gas & Electric is fresh in mind as the result of the revelations of the Chudoff committee. The hearings of the Chudoff committee in the Roseville case, the administration of the preference clause, and on the matter of regulations for transmission lines crossing public lands usually revealed the Pacific Gas & Electric Co. acting contrary to the public interest. I am certain that any congressional investigation of the Pacific Gas & Electric Co. as to its activities in either California or at the national level will serve to prove that the control of this intertie cannot be entrusted to its care.

CONCLUSION

The intertie is engineeringly and economically feasible. It is in the interest of national defense and conservation of fuel. It is financially attractive and fully self-liquidating. Its construction as a Federal facility would be in all respects in the public interest. In order to insure operation in the best public interest and to prevent monopolization the intertie should be constructed jointly by the Bureau of Reclamation and the Bonneville Power Administration. Congress should make an appropriation of $100,000 to each agency for planning and for a report to be completed not later than the end of this year. Finally, we request that Congress in its reports require certain safeguards along the lines of the enclosed draft of language.

PROPOSED AMENDMENTS FOR THE APPROPRIATIONS BILL

In view of the foregoing it is respectfully recommended that the appropriations bill for public works be amended to provide $100,000 each to the Bonneville Power Administration and to the Bureau of Reclamation for the planning of an interconnection between the U.S. Columbia River power system and the Central Valley project.

It is not our thinking that this appropriation would authorize actual construction or in any way authorize this as a new start of a new project. The appropriation would be strictly for planning.

In the case of the budget item for the Bonneville Power Administration under the heading "Operation and maintenance," the appropriations bill might include a proviso along the following lines:

"*Provided*, That not to exceed $100,000 shall be available for investigations, studies, and preparation of plans jointly with the Bureau of Reclamation of a proposed transmission facility for interconnecting the U.S. Columbia River power system and the Central Valley project and submission of a report thereon to Congress not later than December 14, 1959."

In the case of the budget item for the Bureau of Reclamation, the appropriations bill might include an identical provision under the heading "General investigations."

PUBLIC SAFEGUARDS SUGGESTED FOR INTERTIE FOR INCLUSION IN COMMITTEE REPORT

Language along the following lines is recommended for inclusion in the report of the Committee on Appropriations:

"The increase in the budget is for the following facility: (*a*) U.S. Columbia River power system-Central Valley project interconnecting transmission facility (planning), $100,000.

"Suggested as early as 1935 this intertie was recommended in 1950 in the interest of the national defense by the Defense Power Administration. It has been determined to be feasible from the standpoint of engineering and economics by the Federal Power Commission.

"Statutory authority for the construction of the intertie exists in section 2(b) of the Bonneville Project Act (50 Stat. 731) and in the Reclamation Act, as amended. The committee has previously recognized the desirability of electrical interchange and interconnection on both an intraregional and interregional basis.

"The intertie is to be planned by the two agencies using a point at or near the California-Oregon border as the boundary point of interconnection.

"The planning is to contemplate a mode of operation which will limit the use of the intertie for the sale or exchange of residual exportable energy or capacity as the supplier determines in its sole judgment cannot be utilized or sold within its marketing area. Contracts for the operation of the intertie and the sale and exchange of power shall contain rates and charges approved by the Secretary of the Interior, subject to review on December 19, 1964, and every 5-year period thereafter: *Provided*, That before approving any such rate schedule the Secretary shall give public notice and upon adequate request shall arrange for a public hearing in the area affected."

EXHIBIT NO. 1

NORTHWEST PUBLIC POWER ASSOCIATION, INC.,
Vancouver, Wash., January 21, 1959.

RESEARCH MEMORANDUM

To: Pacific Northwest delegation in Congress.
Subject: California intertie.

1. It is respectfully recommended that Congress appropriate $100,000 of loan funds to the Bonneville Power Administration and a like amount to the Bureau of Reclamation to plan the joint construction of one and ultimately two transmission lines of at least 345,000 volts to interconnect the Columbia River power system and the Central Valley project.

2. Our study indicates that the California intertie would have an extremely favorable benefit-to-cost ration of about 5 to 1. It would be an excellent investment.

3. An urgent public interest reason for early construction of the intertie is to eliminate the threat of a wholesale rate increase by the Bonneville Power Administration on the next review date of December 20, 1959. BPA must make its decision in a matter of weeks. If the line had been in operation last year BPA could have changed a $2.9-million deficit into a comfortable surplus for that year. This will be covered in more detail later in this memorandum.

4. In terms of conservation of oil, if we send 3 billion kilowatt-hours into the California market annually, there will be a saving (at 600 kilowatt hours per barrel) of 5 million barrels of oil per year. This is fifty 100,000-barrel tankers of oil per year.

5. Two 345,000-volt lines can carry about a million kilowatts of dependable power to California as summer firm power, as oil displacement and as emergency, breakdown, and backup relief power. However, this is a two-way street and a substantial benefit can accrue to the Pacific Northwest as well. Especially in a critical water year on the Columbia River the Pacific Northwest would obtain vast benefits from the intertie. The line would also be of much value for national defense.

6. The Board of trustes of the Northwest Public Power Association on November 14, 1958, adopted a resolution favoring the California intertie. Similar supporting resolutions have been adopted by the Oregon PUD Association, Southwest Washington PUD Association, Eastern Washington PUD Association, Washington Public Utility Districts Association, Oregon Rural Electric Cooperative Association, Idaho REA Association, Washington REA Association, and

region 9 of the National Rural Electric Cooperative Association. We are not aware of any present opposition to a California intertie, assuming reasonable safeguards.

7. Historically the California intertie has been frequently urged. The ultimate construction of the intertie was envisioned as early as November 1935 in the report of the Pacific Northwest Regional Planning Commission as published in 1936 by the National Resources Committee. This is the report which in part resulted in enactment of the Bonneville Project Act of 1937. The intertie is shown on the map following page 40 of the report.

8. Most recently the intertie has been most strongly recommended by Consulting Engineer Sol E. Schultz, of H. Zinder & Associates, in a report of December 19, 1958, to the public utility commissioner of Oregon, which report is entitled, "Pacific Northwest Transmission Development as Related to the State of Oregon." Excerpts from this report are submitted later in this memorandum.

9. On December 20, 1950, the Defense Power Administration issued a finding that the California interconnection was in the interest of national defense. The Secretary of the Interior Oscar Chapman thereupon approved on January 16, 1951, a basis of agreement between the Bonneville Power Administration and the Bureau of Reclamation for operating the facility.

10. The Federal Power Commission prepared two extensive reports favoring the interconnection. The first document dated February 1950 is entitled, "Study of an Interconnection Between the Electric Systems in the Pacific Northwest and California." The more complete document of March 1953 is entitled, "Report on Feasibility of California-Oregon 230 kilovolts Interconnection," comprising some 150 pages. These reports are now considered obsolete and also they understate the case.

11. The U.S.S.R. has recently constructed the equivalent of the California intertie, a double circuit 400,000 volt line, which is later to be operated at 500,000 volts, from the Kuibyshev Dam on the Volga River 600 miles to Moscow. By comparison, from the Dalles Dam to San Francisco is 530 miles. Kuibyshev at 2,300,000 kilowatts capacity is presently the largest power dam in the world.

12. The long-range market for Pacific Northwest dump power in California is assured. For example, the California water plan not only will need the remaining hydroelectric power potential of California for water pumping purposes but will in addition require some 6 million kilowatts of new steam capacity also for pumping. Since Pacific Northwest power is surplus chiefly during the California summer pumping season, the market is assured. In turn California will be in a strong position to assure the Pacific Northwest of surplus winter steam capacity to help carry the Northwest during a critical water year winter.

13. Several California interties are under discussion. It will be helpful to divide the discussion into two parts, short run and long run. The short run plan is being pursued by BPA as follows: BPA is negotiating with California Oregon Power Co. and Pacific Gas & Electric Co. for a contract which would provide sufficient incentive to those companies to invest about $5 million to build 20 miles of 230,000 volt line from Klamath Falls to the California boundary, then 70 miles 230,000 volt line to P.G. & E.'s Pit River plant No. 3 plus switching stations and series capacitors. This arrangement would be limited to a capability of about 200,000 kilowatts. The line could be built in 1 year. While the terms of the proposed agreement have not been finalized, we would generally favor a deal which assumes a price of BPA power at the California boundary of about 2.5 mills for energy actually sold. This short run approach should enable the private utilities to amortize their line in a very few years and also enable BPA to enjoy some revenues earlier. However, it would be a monopoly line. It should have been constructed long ago as a Federal line to insure full protection of the public interest.

14. For the long run we propose a single and ultimately double circuit heavy capacity line at initial voltage of 345,000 volts and spacing for ultimate 460,000 volts extending about 530 miles from the Dalles and John Day Dams southward via Lakeview, Alturas, and Sacramento to San Francisco. The carrying capacity would be at least a million kilowatts. It is this larger "common carrier" line for which we now urge Congress to release planning funds.

15. The high capacity California intertie will benefit everyone. It is to be a public common carrier facility available first for exchange of power between

the Columbia River power system (BPA) and the Central Valley project (comprising the Bureau of Reclamation's Shasta, Keswick, Folsom, and Trinity Dams).

16. The Federal Government itself would be a major purchaser of BPA power in the San Francisco Bay area for Mare Island Navy Yard, the prisons, the huge Tracy pumping plant and many other large loads. BPA power might cut the summer peaks at some of these loads to achieve dramatic savings for the U.S. Treasury. Secondly, the Bureau of Reclamation's power marketing status would be immeasurably improved. Even the present pro-private utility Comptroller General of the United States has criticized the Bureau of Reclamation for failing to make adequate charges to Pacific Gas & Electric Co. for the dependable capacity value of Shasta Dam and Keswick Dam power plants. The intertie would obviously help the Bureau of Reclamation.

17. As a common carrier line, the California intertie should be available for a reasonable fee to non-Federal agencies, public or private, for wheeling purposes for the exchange or sale of power. These benefits can assist these utilities to achieve enoconmies and hold down rate increases and also can increase their firm power load carrying capabilities thereby reducing their costs for reserve generating capacity.

18. The Northwest Public Power Association opposes any monopolization in connection with the proposed California intertie. It should be a common carrier facility operated on a free market principle. Therefor the larger line must be publicly owned and publicly controlled. Furthermore the terminal facilities and arrangements must be such as to permit access by all utilities.

19. A broad market is available for the California intertie at both ends. For instance, the large Sacramento Municipal Utility District serves about 450 000 people with electricity purchased at about 4 mills from Shasta Dam. While the Bureau of Reclamation contract assures Sacramento MUD up to 290,000 kilowatts up to 1994, the price of 4 mills is reviewable in 1964. In 1955 the SMUD signed up with P.G. & E. for an additional 300.000 kilowatts until 1971. In 1957 the SMUD paid $4,600.000 for power. The SMUD is also investing $85 million to develop 200,000 kilowatts on the American River with 900 million kilowatt-hours energy capability. This energy will come mostly in winter and can be nicely combined with Columbia River summer power. Thus Sacramento is a potential market. However, it merely illustrates the similar cases of PUD and municipal markets of northern California.

20. The Pacific Gas & Electric Co. in both the short run and long run is the largest potential market for intertie power. In 1945 hydro provided 85 percent of P.G. & E.'s energy. Hydro capacity was 2.2 times the steam capacity. In 1952 steam caught up with hydro and by 1961 will be 50 percent greater than the hydro capacity. The 1961 demand will be 5½ million kilowatts and the energy need 30 billion kilowatt-hours, divided 13 billion kilowatt-hours hydro and 17 billion kilowatt-hours steam. At 7 percent rate of growth P.G. & E.'s 1970 need will be 10 million kilowatt capacity and 55 billion kilowatt-hours of energy, increasing by 1975 to 14 million kilowatt capacity and 77 billion kilowatt-hours of energy, of which steam must furnish at least 50 billion kilowatt-hours which means over 80 million barrels of oil per year. Even if half the oil equivalent should come from natural gas, P.G. & E. will need over a 100.000 barrel tanker of oil per day in 1975. Obviously the P.G. & E. system can absorb all surplus dump power available at any future time in the Pacific Northwest. This is just as oil displacement.

21. As previously mentioned, an early future market will be the California $13 billion water plan to transfer 21 million acre-feet of water year from northern to southern California. Assuming the harnessing of 7 million kilowatts of hydro potential (which P.G. & E. also counted for itself in paragraph 20), the California water plan will require 6 million kilowatts of steam capacity in summer for pumping water. Here is another vast market for Columbia River summer power.

22. At an ultimate cost of $40 to $50 million the California intertie would cost less than a new steam plant of half the capacity. But whereas a new steam plant could serve only one area or the other, the intertie would serve both areas, have double the capacity and have no fuel cost. Even more critical would be the value of the line to prevent the brownouts and power shortages such as those of California in 1948 and in the Pacific Northwest in 1948 and 1952. Even the apparently mutual shortage of 1948 could have been handled and solved by the California intertie.

23. The California intertie is one of the largest and most important business decisions facing Congress in regard to the Bonneville Power Administration. The 20-year growth of the BPA surplus hit $104.7 million as of June 30, 1957, then slipped for the first time in BPA history. As of June 30, 1958, it was $101.7 million and may slip further to an estimated $94.8 million by June 30, 1959, and $89.7 million by June 30, 1960. However, the recent upswing in business should improve this picture.

24. This surplus is the cumulative profit above all costs required under the FPC uniform system of accounts. As of June 30, 1957, for example, BPA had accumulated $529 million in gross revenues from which it paid $141 million for O. & M., $122 million for depreciation (mostly debt repayment to the U.S. Treasury), $162 million for interest for a total of $425 million of total costs leaving $104,711,339 surplus net revenues.

25. The business decision to be made is whether to absorb the present annual deficits by letting them reduce the cumulative surplus net revenues from previous years. We think the answer is, "Yes, if the California intertie is promptly started." Without the California intertie BPA is in for rough sledding and may require a rate increase in 1964.

26. We are aware of other business decisions which can improve the management of BPA and we propose that these be placed in effect. Chiefly Congress by enactment of the Columbia River Development Corporation bill can take care of the remaining areas. One of these is to set aside, with respect to power from future generators, the anti-industry clauses of the 20-year private utility contracts of August 1953 as entered into by Secretary Douglas McKay.

27. Regardless of explanations, BPA in the year ending June 30, 1958, had to waste over 15 percent of its power because of the lack of a "farm-to-market road" to get the power to a ready market. It could have generated and sold an additional 5,800 million kilowatt-hours over and above the 32 billion kilowatt-hours which it did sell. Through the intertie BPA would have been able to sell much of this surplus and would have changed a $2.9 million deficit into a comfortable surplus. Other advantages to BPA would be the changing of its definition of firm power so it could upgrade its power under critical water conditions by including imports from California. Thereby BPA would have more firm power to sell and would be in a healthier market position. The intertie would largely eliminate the fears of a minimum water year in both the Pacific Northwest and California.

28. The most recent report favoring the intertie by Consulting Engineer Sol E. Schultz, former BPA Chief Engineer, states in the covering letter of December 19, 1958:

"One matter * * * we believe deserves particular attention, relates to the possibilities of a major interconnection with the power systems in California. We are convinced that a comprehensive survey would show substantial and lasting benefits from such facilities to Oregon, the Northwest, and California."

Chapter V, pages 29–39, is devoted to the problem of surplus hydro and the possibility of marketing in California. Mr. Schultz finds (page 32) that the Pacific Northwest will have an average surplus of energy of at least 3 billion kilowatt-hours (per year) over the next 10 or 15 years.

We think it will be at least that much.

We conclude this research memorandum by quoting in full the concluding portion of the report by Mr. Schultz, pages 36–39:

"INTERREGIONAL TRANSMISSION OF POWER

"For many years the Utah Power & Light Co. has pooled its power supply with that of the Idaho Power Co. and the Montana Power Co. Surplus hydroelectric energy from Idaho and Montana has thus been used to reduce fuel consumption in Utah while energy from Utah's steam plants has been available to supplement hydroelectric production in Idaho and Montana when stream flows were low. Since 1955, when a high capacity interconnection between the Idaho Power Co. and the Bonneville Power Administration was made at La Grande, Oreg., a similar interchange has been possible between Idaho-Utah and the west group of the Northwest Power Pool. (Earlier interchange limited by capacity of lower voltage transmission lines.) In the 12 months ending June 30, 1958, BPA sold over 128 million kilowatt-hours of nonfirm power to the Idaho Power Co. over the La Grande interconnection.

"It appears appropriate to suggest that active consideration now be given to the possibilities of the sale of such surplus energy to the power supply

systems in the State of California. This may raise anew certain problems relating to power interties between the Northwest and California, which seem to fall outside the fields of engineering or economics.

"The matter of a California tie (as it was called) was studied by the Bonneville Power Administration and the Bureau of Reclamation in the early 1950's. Later the Federal Power Commission (with the participation of all of the agencies and utility companies concerned), made a study which culminated in the report by the Commission issued in March 1953. This report confirmed findings of the two Department of the Interior agencies that the tie showed important engineering and economic benefits, but no action was taken.

"The FPC report was premised on the assumption that interconnecting facilities between California and the Northwest would be in service by the fall of 1954. Viewed in retrospect, there can be little question that these facilities would have shown much greater benefits than those indicated in the FPC report.

"Had the interconnecting facilities comprising two 230-kilovolt circuits been placed in operation by the fall of 1954 as supposed in the FPC and the BPA studies, the sale of dump energy to California would have completely amortized by now the investment of about $16 million in such facilities. (Assuming a price of 2.5 mills per kilowatt-hour times the amount of energy available from the Federal system as shown by table 7 but limited to the capacity of the two 230-kilovolt circuits.) Moreover, the revenues henceforth over the next 10 years would probably be sufficient to wipe out the fiscal deficits forecast by the Bonneville Power Administration and referred to above. In the FPC report it was assumed that this exportable energy was valued at 3 mills per kilowatt-hour, based on oil for steam-electric generation at $1.88 per barrel. Today the price of oil in California is between $2.50 and $3 per barrel.

"Revenues from the sale of dump energy represent only one of a number of highly important benefits to be realized from power interties with California. Among the most noteworthy are the following:

"1. The interconnection would promote the conservation of natural resources. The annual utilization of as much as 3 billion kilowatt-hours of otherwise wasted hydroelectric energy each year would result in an annual saving of 5 million barrels of oil.

"2. It would increase the dependable power supply capacity in both California and the Northwest because of the diversity of loads and resources between the areas. It is believed this factor alone would justify a major investment in tieline facilities.

"3. It would provide reserves against power emergencies in either of the areas. One only has to recall the incident of March 14, 1952, at Grand Coulee Dam when the entire plant was threatened with a protracted shut down to appreciate how important the tielines might be in similar circumstances.

"4. It would have real value to meet the exigencies of national defense.

"All available reports on California-Northwest interconnections are at least 5 years old and require major revision to bring them up to date.

"Because of their limited scope, none of the existing studies were truly comprehensive in evaluating all of the benefits that might accrue to such facilities. It is timely now to suggest that steps be taken to conduct a definitive survey that will achieve this purpose."

Respectfully submitted.

GUS NORWOOD,
Executive Secretary, Northwest Public Power Association.

EXHIBIT No. 2

NORTHWEST PUBLIC POWER ASSOCIATION, INC.,
Vancouver, Wash., March 27, 1959.

Re BPA wholesale rates.

Hon. FRED A. SEATON,
Secretary of the Interior,
Department of the Interior,
Washington, D.C.

DEAR SECRETARY SEATON: The time is near for the quinquennial review of Bonneville Power Administration's wholesale rates.

The outcome of this review is of much concern to the consumer-owned electric systems which comprise the Northwest Public Power Association.

Of the 114 wholesale power customers of BPA the 75 public and cooperative distribution systems in fiscal year 1958 paid $23,570,000 into the United States Treasury or 35 percent of BPA's revenue.

Our consumer-owned electric systems are unique. We operate on a nonprofit basis and pass on to our consumers in the fullest manner the benefits made possible by the U.S. Columbia River power system. We support full, multiple purpose development of the Columbia River. We try to take a public interest point of view.

Upon the advice of our wholesale rate committee, our board of trustees has directed a study be made of the various factors which have operated against the Bonneville Power Administration on electric rates.

RECOMMENDATION

On the basis of our study we think the sound and prudent business decision is to retain the present level of BPA wholesale power rates for the next 5-year period in order to permit an opportunity for certain adjustments to take place which, we think, will increase revenues and will reduce imputed costs.

Our optimism on overcoming the present depression in BPA's financial picture is based on a careful analysis which demonstrates that a marshaling of the favorable factors can improve the BPA wholesale rate picture by at least 15 percent.

These favorable factors can overcome not only the present depressed conditions but also the anticipated higher costs of power from John Day, Ice Harbor, and other dams. Thus these factors can prevent a rate increase not only in 1959 but possibly in 1964.

Although some of these factors may depend on remedial legislation such as our proposed regional corporation bill, we think most of the changes can be effected by administrative decision.

Some of these administrative and legislative decisions may require one or more years to bring about. Fortunately BPA has accumulated a substantial surplus which can serve as a cushion during this period of adjustment.

1. Three potential economies at Grand Coulee Dam

The $12.8 million annual charge which BPA pays on behalf of Grand Coulee Dam contains three imputed costs which should be adjusted downward.

Ever since Grand Coulee dramatically stopped the 1956 Columbia River flood it has been obvious that a significant portion of the project should be allocated to flood control. By law flood control is nonreimbursable and should not be charged to power users. Even if the time for making the change in allocation is postponed until all the flood valves at Grand Coulee Dam are changed, the savings of perhaps $2 million per year can be anticipated.

A second imputed cost at Grand Coulee Dam is the result of a foreshortening of the payout schedule on the power investment from the normal 50 years to 32 years. This creates an unnecessary and arbitrary extra burden on power users of $1,900,000 per year.

Here is a dam which should last at least a thousand years yet is scheduled for amortization on practically an FHA-housing-mortgage basis. Our request is extremely modest as we believe that a 100-year repayment period would be fully justifiable. Indeed Bulletin F of the Internal Revenue Service allows a 150-year depreciation period for dams. Hungry Horse Dam is on a 150-year-depreciation-period basis although on a 50-year basis for payout purposes.

The third imputed cost at Grand Coulee Dam appears to be a charge of about a million dollars a year because some of the irrigation subsidy charge has been placed on top of the power payout schedule. We strongly advise that all irrigation subsidy be placed after completion of the power payout schedule. This might entail a slight extension of the estimated irrigation subsidy period beyond the year 2022.

Some of this adjustment may require legislation. If Congress considers the Pacific Northwest account legislation, we intend to ask for amendments which will insure that the power repayment schedule for Grand Coulee is established at 50 years and that the irrigation subsidy commences in the 51st year.

After allowing for overlapping effect these three imputed costs amount to about $4,500,000 annually. Their elimination would reduce the annual charges payable by BPA on behalf of Grand Coulee Dam from $12.8 to $8.3 million.

2. Improvement in navigation cost allocation picture

The Army 308 review report for the Columbia River shows a doubling of the navigation benefits at Columbia and Snake River projects as compared to the 1948 predictions which were used by FPC in making the McNary Dam cost allocation.

In 1954 we protested the McNary Dam cost allocation because 97½ percent of the $147-million joint cost was charged against power. The present outlook in view of the doubling of navigation benefits is for the 97½ percent to be reduced at least to 81 percent, a transfer of $24¼ million from power to navigation. This should result in an annual saving of almost $1 million, which should be retroactive for each of the past 4 years.

The cost picture of the Dalles project is still in flux as generators are being installed; however, in the case of the Dalles Dam this new allocation approach for navigation will reduce the burden on power users about a half million dollars per year increasing to about three quarters of a million dollars in a few years.

The immediate economy on behalf of McNary and the Dalles projects is thus at least $1½ million per year. By itself this minor change in cost allocation, had it been placed in effect last year, would have cut in half the BPA accounting deficit for fiscal year 1958.

The same cost allocation approach will apply at John Day, Ice Harbor, and the future lower Snake River projects for a total ultimate saving of about $6 million a year.

3. Severe FPC standards hurt BPA

The standards for amortization period, cost allocation, and interest rates imposed upon the Bonneville Power Administration in the FPC cost allocation orders for Bonneville and McNary projects are unduly severe and considerably exceed the requirements of law.

First, the amortization period of 50 years as set by FPC is unduly severe as an interpretation of the Bonneville Act requirement that BPA shall observe the FPC uniform system of accounts.

Nowhere in the FPC uniform system of accounts is any public or private utility required to amortize real property or to depreciate the cost of a dam on a short-term 50-year basis. Private utilities quite generally use a 100-year depreciation period for hydroelectric projects.

TVA not only uses 100 years for depreciation purposes of new dams but uses a new 100-year period for depreciation of any addition to an old dam, as at the 40-year-old Hales Bar Dam which results in a 140-year depreciation period for that project.

The Bureau of Reclamation has been a leader in advocating longer economic service life of projects. The Hungry Horse Dam is on a 150-year depreciation period.

The trend is and must be in this direction. These Columbia River dams are free of silt problems and should last for at least a thousand years. They will provide society with tremendous benefits long after the completion of the payout period.

BPA accounting records already show the difference between the 50-year amortization basis and the standard FPC cost accounting basis using a 100-year depreciation period. As of June 30, 1957, the BPA surplus on the former basis was $78.8 million whereas the cost basis shows $104.7 million surplus. This difference of $25.9 million generally indicates the order of magnitude of the extra burden which has been placed upon BPA in past years.

Another way of evaluating the difference is in terms of the annual debt service requirement, based on 2½-percent interest, which calls for 3.53 percent on a 50-year basis and only 2.73 percent on a 100-year basis. The difference of eight-tenths of 1 percent when applied to about $700 million of long-life investment amounts to $5.6 million annually. This is 8 percent of BPA's annual cost.

Second, the FPC has been too severe in its cost allocation to power. The McNary case has been mentioned in connection with the tendency to underestimate and understate the navigation benefit and thereby overburden power.

However, this understatement of the navigation servitude is part of a larger problem of myopia with respect to time. A 50-year period is simply too short for measuring navigation benefits. This is illustrated by TVA experience.

Although TVA began construction in 1933, Congress had been pouring navigation investment into the Tennessee River for over a century. Wilson Dam had been completed in the early 1920's. Not until 1945 was the 630-mile inland water-

way ready for through commerce. Then ensued a further decade of development while dock facilities were installed. Not until 1955 did the TVA navigation investment reach the break-even point. In the past 4 years the computed rate of return has been spectacular due to a rising river traffic. The latest annual report shows an 11-percent rate of return, having jumped 2 percent each year since 1955.

The lesson of TVA is that navigation requires a development period of about 25 years. The Columbia-Snake River navigation waterway will not be completed until about 1980. River traffic will probably not mature until close to the year 2000. Probably the period 2000 to 2050 would provide a realistic period for determining average annual navigation benefits.

Because of the long development period, the curve for navigation benefits makes a very slow start. It then has an upward sweep such that the aggregate benefits in the second 50-year period will be three or four times as great and in the third 50-year period will increase further.

This leads to the recommendation that even when a dam is on a 50-year repayment period, that the cost allocation for navigation be computed on a 150-year basis. On this basis the allocation to navigation at McNary Dam should not only be doubled as currently recommended but should certainly be tripled.

This same approach is true for flood-control allocations for projects like Hungry Horse, Detroit, Lookout Point, and similar upstream storage dams. Flood-control projects may have an early benefit to the downstream areas, but the value of the benefit does not reach any mature level until reasonably full flood control is assured and after about a 25-year development period. Where many dams are needed this may require some 50 years from the time the early projects are built until the maturity benefit value is reached. Again obviously an average of that 50-year period would understate the flood-control benefit. Hence again a 150-year period is desirable.

Whereas the $2.4 billion Federal gross investment in the Columbia River as of June 30, 1957, included less than $100 million each for navigation and flood control, we think a realistic value is closer to $300 million each. The economy of a 3.53-percent debt service charge plus operation and maintenance costs on $400 million would result in a saving to power users of over $14 million per year initially and would increase to substantially larger amounts in later years.

Third, another heavy burden of imputed costs created by FPC is interest. No interest payment is required by the Bonneville Act. However, in 1945 in the Bonneville Dam cost allocation order FPC set the interest at 2½ percent on the basis of the cost of money on long-term bonds.

TVA pays no interest. Irrigation projects pay no interest. The law does not require interest. Yet BPA as of June 30, 1957, had paid in $161.7 million. Interest is taking over 40 cents out of every BPA revenue dollar.

Even if one were to concede the necessity of imputing an interest charge, the question would remain as to the level of interest. There is at least one-half of 1 percent difference between the average cost of money to the Government as compared to the average cost on long-term bonds. We estimate that the more severe standard required by FPC has cost BPA about $50 million in direct interest or in interest charged to construction. Each one-half of 1 percent in interest increases the BPA wholesale power cost 8 percent.

Charging interest during construction and then interest on the interest raises another policy question, especially since the Bureau of Reclamation does not use this method.

If as a matter of policy, we concede that interest should be paid, then we would still hold in favor of only that cost which reflects actual cost of money to the Government. In respect to the amortization period and cost allocations we estimate, after deducting duplicative effect, a possible annual saving to power users of about $15 million in the short run and increasing as the power investment increases.

4. California intertie attractive

Turning to the revenue side of the BPA financial picture, the most promising of BPA's business prospects is the construction of the California intertie. A high-voltage, high-capacity interconnection between the U.S. Columbia River power system and the Central Valley project has been estimated to be worth around $8 million in terms of net income to BPA annually. We refer not to the proposed private utility 230,000-volt line, but to a major double circuit line of initially 345,000 and ultimately 460,000 volts. Because we understand the facts

on this matter will soon be presented to the Congress, we will say no more in this letter except to emphasize the large amount of net income impact which this line could have on BPA.

5. Other methods of improving BPA revenue picture

As the U.S. Columbia River power system matures, a number of trends will improve BPA's revenue picture. As more upstream storage is added, there will be more downstream benefits from existing generators. Also as more downstream dams are built, there will be greater value from existing upstream storage reservoirs. Both ways BPA gains revenue.

Improvement in regional power can be anticipated as the region pulls out of the present depression. Certainly the market for interruptible power should improve over its present low state. Last year BPA sent about 15 percent of its power over the spillways. If it could have sold this power, it would have had some $9 to $13 million in additional revenue.

Another major area for improvement is that of industrial sales. BPA at one time had a reasonably dynamic power sales policy toward industry. In 1953 this policy was reversed by means of the 20 year private utility contracts which contain numerous anti-industry clauses (see our memorandum pp. 123–127 of Senate hearings on S. 3114, May 21, 1958). These clauses are probably ultra vires. In our view they can be canceled on the ground of being contrary to the public interest. They do not appear to us to be enforceable in any court. Whatever action is needed, we urge that the anti-industry policy of BPA be reversed and that BPA establish a staff to work with industry in an effort to assist regional economic development and at the same time improve BPA's revenue picture.

Finally we think BPA should institute a study of services which it is providing but for which it does not receive adequate compensation. Our office continues to receive complaints that BPA does not charge adequately for its many power pooling services, such as emergency backup, providing maintenance reserves, provisional power, peaking duty, certain types of wheeling, and general operating reserves. We are not able to make this study. We urge that a study be made.

SUMMARY ON BPA FINANCIAL OUTLOOK

We think BPA will come out in good shape if action is taken on most of the factors listed in our letter. The rescheduling and new cost allocations at Grand Coulee Dam, the new cost allocations at the navigation projects, a revision of the ground rules used by FPC in making cost allocations, and the improved outlook in revenues by greater sale of power as by means of the California intertie, all serve to paint a promising and optimistic picture of BPA financial prospects.

On balance it appears reasonable that a 15 percent improvement can be expected in BPA's financial outlook. This amounts to $15 million when BPA revenues reach the $100 million per year level, and about $30 million when BPA revenues reach the $200 million per year level.

For all of these reasons we respectfully recommend and request that you recommend to the Federal Power Commission a continuation of the present general level of wholesale power rates for the Bonneville Power Administration.

Respectfully submitted.

GUS NORWOOD,
Executive Secretary.

EXHIBIT NO. 3

NORTHWEST PUBLIC POWER ASSOCIATION,
April 17, 1948.

HON. CLAIR ENGLE,
House Office Building, Washington, D.C.

DEAR MR. ENGLE.: This association is following with interest your efforts to obtain an electrical intertie between the Pacific Northwest and California. I presume you have Federal Power Commission release No. 3350 of November 23, 1947, which includes a map showing such an intertie. I hope you also have on hand "Advance Program of Transmission System Development 1948–54" issued by the Bonneville Power Administration in January 1948. I am sure Mr. J. P. Alvey in room 6329, Department of the Interior Building, can provide one. Mr. Alvey is the BPA liaison officer in Washington, D.C. I recommend him to you as a very well-informed engineer in these matters, if you have not already met him.

Now I would like to request that you provide me a copy of your proposed bill and brief statements as to your plans for meeting this problem. I shall wish to analyze these and publish a summary in my public power bulletin for our member public power systems.

Generally the members of this association recognize that despite our own power shortage, we are wasting power over the weekends and at nights and much more power at certain seasons, so there is power available for export, that is dump power. You can rest assured that we will rise in wrath if you take our firm power. This association has not gone on record for or against sending power into California, but if I may venture a personal opinion, I think that even a rapid cursory enginering study would reveal that the line is feasible.

The practical factors relating to the line include the question as to who would build it. My conception of this problem would be that the Bureau of Reclamation would build to the California-Oregon border and the Bonneville Power Administration would complete the line northward following its own proposal indicated on the map, page 72, of the document referred to above.

The 230,000 volt line proposed by BPA into southern Oregon passes within 50 miles of the California border. May I suggest that this line has been in the back of the minds of BPA officials since about 1937, and it included the possibility of the California intertie.

In the copy of the Bonneville Project Act which is enclosed, section 4(d) would seem to indicate that the Bonneville Power Administration has authority to transmit energy "within economic transmission distance." If a study would reveal that California, or northern California, is within economic transmission distance, then my suggested boundary line at the California border may seem inappropriate. However, considering that the electric energy generated within the Columbia River Basin represents a valuable part of the riparian rights of the Columbia Basin States, I can conceive that these northern States could establish a right to this power, i.e. firm power, and prevent its export. At any rate an interstate compact could so provide. Considering this possibility I hold to the view that the Bonneville Power Administrator should deliver firm power only within the basin. This conception would not prevent him from building a transmission line right down to Shasta Dam as an intertie because he already has the authority under the Bonneville Project Act. I still think it would be safer, in view of certain future contingencies, such as the question of riparian rights in this power, that BPA build no line within California, but merely intertie at the border. However, this intertie should not require a new law. All it requires is an appropriation to BPA and the Bureau.

BPA is at present sending dump power into Canada under a Presidential permit. This transaction does not deprive this region of any power, but it does provide additional revenue to pay off the Federal investment. At the end of next year, on the other hand, we expect to import dump power from Canada to help meet our own shortage. I should think you would regard these Canadian transactions as relevant to your case. The data is available at the BPA offices in Portland.

To sum up: This association has taken no stand in view of the fact that no engineering and economic study has been made. We would probably stand against the export of firm power. I think that an intertie is inevitable, if not at 230,000 volts within a few years, then at something like 500,000 volts when the technical development is ready. There was recently a 500,000 volt test in Ohio. Regarding the riparian rights of the States, I think the Colorado River Basin States are several decades ahead of the Columbia River Basin States, but in my opinion the question will eventually arise. I hope it arises as a matter of law and not of politics. I think the California interie can be provided with an absolute minimum of politics or controversy if provision is made (1) for the exchange of dump power, (2) for the construction of the line within Oregon by BPA and within California by the Bureau of Reclamation.

I plan to be in Washington, D.C., the end of May for Senate hearings on Interior appropriations and will be glad to call on you if you wish.

Sincerely,

GUS NORWOOD,
Executive Secretary.

EXHIBIT No. 4

CONGRESS OF THE UNITED STATES,
HOUSE OF REPRESENTATIVES,
Washington, D.C., April 24, 1948.

GUS NORWOOD,
Executive Secretary, Northwest Public Power Association, Inc.
Vancouver, Wash.

DEAR MR. NORWOOD: Thank you very much for your letter of April 17, 1948. I certainly appreciate the information therein set forth, especially your views with reference to the feasibility of the transmission line which I have urged. I am enclosing a copy of my statement made before the House Appropriations Committee. This suggestion, I may say, was not received with very much enthusiasm by the House Subcommittee on Interior Appropriations. However, I am firmly convinced that the proposal is not only feasible but with any proper regard for an efficient use of energy is inevitable.

I have not as yet gotten together a draft of a proposed bill but am working on it. There are two propositions which I intend to try to write into the legislation: First, that the transmission lines will not be used for the conveyance of firm power; second, that the final decision with reference to the transmission of power will always be made by the Bonneville Power Administration rather than from high or other authority.

The purpose of these provisions is to allay any fears in the Northwest that it is the intention to take any of the firm power from the Bonneville area, or to take any power which may hereafter become firm, or to take away any other power which can be utilized in the Bonneville area. It is my contention that there is sufficient dump, or, as I call it, waste power in the Bonneville system to justify the transmission line many times over. Your statement in regard to the power from the Bonneville system now being dumped in Canada is of very great interest in the light of the current power shortage in California.

As pointed out in my statement, I think also that the transmission line would have the effect of some time or other providing help in the Bonneville area. Our storage capacity in the Central Valley, plus the fact that 50 percent of our power is generated from steamplants, makes the integration of our system a natural with the generating system on the Columbia, which is a run-of-the-river proposition for the most part without any large percentage of storage facilities.

I expect to be in California during the month of May but will be back here shortly after the first of June. If you are in Washington during that time I wish you would contact my office because I would like very much to discuss the situation with you. I do not believe that there should be any political controversy involved in this propostion and I think it can be handled in such a way that the people in the Bonneville area will have the assurance they are entitled to and at the same give all the people the maximum benefits which should be secured from integration of these two great projects. If there is any further information I can give you in the interim, please do not hestitate to let me hear from you.

Very sincerely yours.

CLAIR ENGLE, *Member of Congress.*

EXHIBIT No. 5

[H.R. 6367, 80th Cong., 2d sess.]

A BILL To conserve water and power for irrigation and related purposes and to conserve petroleum used in power generation and to direct the construction, operation, and maintenance of transmission lines interconnecting Federal power systems of the Bonneville Power Administration and the Bureau of Reclamation in the Pacific Northwest and northern and central California.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That for the purpose of conserving water and power for irrigation and related purposes and to conserve petroleum used in power generation, the Secretary of the Interior, through such agency or agencies in the Department of the Interior as he may select, is hereby directed to construct, operate, and maintain such transmission lines as may be required in his judgment for the adequate interconnection of the power generating, mar-

keting and transmission facilities heretofore or hereafter constructed and/or administered by the Bonneville Power Administration and/or the Bureau of Reclamation in the States of California, Idaho, Oregon, and Washington.

SEC. 2. The construction costs of such interconnecting transmission lines shall be apportioned by the Secretary among the projects or systems interconnected and shall be amortized in accordance with the laws governing the amortization of such investments in connection with the projects or systems to which they are apportioned. Operation and maintenance costs of such lines shall be apportioned annually among the projects or systems interconnected and shall be returned in accordance with the laws governing the return of operation and maintenance costs of the projects or systems to which they are apportioned.

SEC. 3. The system of origin shall have first right to any and all power of that system without regard to the requirements of any other system or systems. Exportation of power from any system shall be limited to dump or waste power except that exportation of firm and/or secondary power or power of other classifications may occur only on certification of the Administrator of the system of origin that there is a surplus of that classification to the needs of that system.

SEC. 4. There are hereby authorized to be appropriated, out of any moneys in the Treasury not otherwise appropriated, such sums as may be required for the purposes of this Act.

EXHIBIT NO. 6

BIBLIOGRAPHY ON THE CALIFORNIA INTERTIE

The following bibliography comprises a chronological digest of data on file in the office of the Northwest Public Power Association on the subject of the California intertie. Chief activity was in the years 1948 and 1951.

1. November 1935: Chart prepared for the Pacific Northwest Regional Planning Commission shows a long-range electric transmission system including a 230,000-volt line from Portland, Oreg., to California. The chart appears after page 40 of "Regional Planning—Pacific Northwest" (p. 1, 192 pp., May 1936, national resources committee).

2. November 23, 1947: FPC Release No. 3350 consists of map showing desirable interregional interties including California intertie.

3. January 1948: BPA issues "Advance Program of Transmission System Development 1948–54" includes map at page 72 showing southern Oregon 230,000-volt loop which could be part of California intertie.

4. February 4, 1948: Oregonian story on drastic power curtailment in California due to extremely dry water year.

5. March 12, 1948: Testimony of Ben W. Creim of Bureau of Reclamation before California Utilities Commission at San Francisco relative to P.G. & E. refusal to wheel Shasta power even during power crisis. In April 1, 1948, Congressional Record.

6. March 23, 1948: Assistant Secretary William Warne of Interior Department writes Congressman Norris Poulson that diversion of Columbia River into California would be practical. Reprinted in March 29, 1948, Congressional Record.

7. April 11, 1948: Special Writer Richard L. Neuberger in Sunday Oregonian describes how fast-drying California looks toward Columbia River for water.

8. April 12, 1948: Congressman Clair Engle's testimony before House Appropriations Committee includes recommendation for authorization of California intertie to make possible sending 2 billion kilowatt-hours annually from Northwest into California. Item was inserted in Congressional Record.

9. April 17, 1948: Letter from Gus Norwood, executive secretary, Northwest Public Power Association, to Congressman Clair Engle, relative to California intertie, urging that the intertie be limited to dump power, and citing BPA's good experience in exchanging power with Canada.

10. April 24, 1948: Letter from Congressman Clair Engle to Gus Norwood, executive secretary, Northwest Public Power Association concurring on policy that no firm power should be allowed to be contracted via California intertie.

11. April 28, 1948: Congressman Clair Engle introduced H.R. 6367 to authorize construction of California intertie. (Referred to Committee on Public Lands.) The bill insures that only dump power is authorized over the line.

12. April 29–30, 1948: Minutes of Bonneville Regional Advisory Council included oral report by Power Manager William A. Dittmer on feasibility of the California intertie. He stated that a 75,000-kilowatt average could have been sent south or 620 million kilowatt-hours in a good water year. He has been advised California could use 150,000 kilowatts at any time for fuel displacement. He cited BPA's good experience with the Canada tieline.

13. August 12, 1948: Mr. Ben W. Creim, Regional Power Manager, Bureau of Reclamation, Sacramento, addressed the annual convention of the Northwest Public Power Association at Port Angeles, Wash. Nothing in 1949 and 1950.

14. January 4, 1951: Letter from Secretary of the Interior Oscar Chapman to Mr. Ford Northrop, president, Northwest Public Power Association, advising of his recommendation to President Truman to include budget request for California intertie. (He refers to the March 29, 1950, Everett, Wash., meeting at which he discussed the California intertie with public power leaders.)

15. January 19, 1951: Letter reply of Ford Northrop to Secretary Chapman which expressed certain fears as to price of power and protection against commitment of firm power.

16. January 17, 1951: Copy of teletype from Secretary of the Interior to Bonneville Power Administration and to Bureau of Reclamation announcing that the Defense Power Administration has made a finding December 20, 1951, approved on January 3, 1951, that the California intertie is in the interest of the national defense. The teletype directs the Bureau and BPA to take immediate steps to build the facilities. The teletype further set forth in the principles to be included in the proposed agreement between the Bonneville Power Administration and the Bureau of Reclamation.

17. Interior Department news release, January 17, 1951, announces Defense Power Administration approval of Oregon-California interconnection.

18. The Budget For Fiscal Year 1952, page 693, proposes intertie.

19. House Report No. 339, 82d Congress, 1st session, April 20, 1951, on H.R. 3790, Interior Department appropriation bill, 1952, at pages 10–12, the Appropriations Committee specifically denied the item of $1,700,000 for the CVP–BPA interconnection and substation, 230 kilovolts, and further scolded the Bureau of Reclamation for having made surveys without authority.

20. House Document No. 39, May 21, 1951, consisting of a communication from the President of the United States submitting a request for a supplemental appropriation for the intertie.

21. Congressional Record references to intertie, April 23, 1951, page 4251; May 1, 1951, page 4753; May 2, 1951, page 4788; May 10, 1951, pages A3202–A3203.

22. Congressional Record, March 6, 1951, page A1257–A1258 consists of Rudy Block broadcast "Northwest Power Situation."

23. The Pacific Northwest Public Power Bulletin, February 1, 1951, carries four intertie items, the two letters between Northrop and Secretary Chapman, an editorial "What Will Be the Price?" and article "Comparing the Two Power Pools," all these also inserted in Congressional Record, February 2, 1951, pages A613–A614.

24. Report on intertie, February 2, 1951, by special subcommittee of power use and conservation committee of Washington Public Utility District Commissioners' Association, 9 pages.

25. Telegram to Representative Edward E. Henry of Washington Legislature from Secretary Chapman, February 20, 1951, explaining value of intertie and announcing latest action by Defense Electric Power Administrator C. B. McManus on February 19, 1951, urging construction of intertie by November 1, 1952.

26. Letter to Congressman Jackson from Northwest Public Power Association, February 26, 1951, urging that price for BPA power at California-Oregon border should be 2½ mills.

27. Telegram from Ford Northrop to Congressman Henry Jackson, February 28, 1951, opposing intertie on grounds that the intertie advantage is heavily weighted for the Bureau of Reclamation.

28. Oregon Grange News, March 5, 1951, reports approval of intertie by Oregon Grange executive committee.

29. Letter to Northrop from Secretary Chapman, March 8, 1951, replying to Northrop letter of January 19, 1951.

30. Resolution of the Southwest Washington Public Utility Commissioners Association, March 11, 1951, endorsed Maupin-Klamath Falls 230,000-volt line

but opposed the CVP–BPA intertie because of the lack of an equitable arrangement.

31. March 19, 1951: Congressman Clair Engle reintroduced his bill to authorize the intertie, H.R. 3294.

EXHIBIT No. 7

POWER SHORTAGE IN NORTHERN CALIFORNIA

Address by Ben W. Creim, Regional Power Manager, U.S. Bureau of Reclamation, Sacramento, at the convention of the Pacific Northwest Public Power Association, Port Angeles, Wash., August 12, 1948

It is possible to talk all day about the northern California power shortage. What has happened down there has a long history: it is a story full of colorful incident and far-reaching significance. But in most respects the object lessons to be drawn from it apply uniquely to the northern California power supply economy. To relate our story to the problem on which this convention is focused—the immediate and continuing threat of acute shortage in the Northwest—it will perhaps be most helpful if I make a brief account of the California crisis and then present such general conclusions as may be drawn.

Right at the start, however, I should say that the factor of highest importance in our power supply has little to do with the present shortage itself. The electrical economy of northern California is undergoing a radical change in its fundamental structure—one which will have considerable impact on the industry along the entire Pacific coast. From an overwhelmingly hydro economy, we are shifting almost overnight to a largely fuel-electric operation which promises to become overwhelmingly a steam economy in the near future. The shortage crisis only served to accelerate this development and make it plain to see.

Envious California power men frequently say of the Northwest that you have "water running out of your ears" up here. Since you do get by with almost no steam generation, the phrase has a certain aptness, and perhaps it would help to explain what happened in our area if I pointed out some differences between the two hydro potentials. Our streams are short and steep, with large flash flows in late winter and early spring but with increasingly reduced runoff throughout the summer and into the fall. Our annual peak demand, however, occurs in midsummer—July and August—as a result of the tremendous irrigation pumping load. So we have to depend on storage plants, a great number of small ones. Shasta Lake is far and away the largest storage reservoir in California, with its 4½ million acre-feet. The largest reservoir among the 53 hydro plants of the Pacific Gas & Electric Co. is Lake Almanor, with 636,000 acre-feet. Releases from storage for irrigation coincide with the annual peak demand, a beautifully efficient operation, provided you have enough hydro capacity. But the pinch comes in late fall, when storage has been well drawn down and before the winter rains set in. Domestic and commercial use increases, and steam must go on the line to meet the load. Steam capacity is equally necessary as standby for dry years, and in northern California a dry year is really dry. With the median-year as norm, the Sacramento River has a variation of 204 percent in annual runoff over a 40-year period, as contrasted with 53 percent for the Columbia River at Coulee and 65 percent at The Dalles. In order to take care of its yearly hydro deficiency and its periodic dry cycles, our area has had a traditional steam component of installed capacity averaging about 30 percent, while over the years steam generation has averaged about 13 percent of annual.

This working and standby steam, which in 1941 totaled about 600,000 kilowatts of capacity, absorbed almost the entire load growth of the northern California market during and after the war. It was the rapid disappearance of this reserve which caused us in the Bureau of Reclamation to call a warning first in December of 1946 and then, repeatedly, throughout 1947. The warning did not go unheeded: it was taken derisive note of by the private utility company which is almost the sole power supplier for the entire northern California power market, and it was greeted with eloquent silence on the part of regulatory officials in the area. Their optimism, paradoxically, was based on their expectation of a slump. There was no slump; there was only more growth. The people who came to California during the war stayed on, and more kept coming; hundreds of new water wells

were sunk in 1947 to add to the thousands sunk during the war boom; California was suddenly discovered to be the Nation's second biggest market area, and commercial enterprise boomed. The demand for oil and chemical products reached new heights, so that even the industrial load showed only growth.

At the end of the war, the utility company had stated that its program was based on an expected annual load growth of 100,000 kilowatts. In 1947, however, a growth of 225,000 kilowatts took place over the peaks. It took place not without incident. Frequent failures in the bay area, ranging in duration from a half hour to 3 hours, and always occurring at daily peak times, were attributed to lightning, a rat falling across a circuit, forest fire, and drought. On July 29, 1947, demand rose beyond available capacity and frequency sagged alarmingly. Reduced voltage went into effect in the bay area, and in August interruptible contracts with chemical plants were invoked. The plants reduced their production to one-third, and immediately a chain reaction set in. Fertilizer, needed by the area's basic industry, became unobtainable; caustic soda, required by its second most basic industry, oil refining, became unobtainable and several refineries were preparing for large-scale shutdown when the crisis eased; and finally, chlorine became unobtainable so that municipal sewage disposal got out of hand and miles of beaches had to be closed.

Water conditions were only slightly below average in 1947, yet the area's steam capacity worked at 97 percent plant factor in August, while the year's average was 82 percent. This, of course, marked the saturation point: steam could absorb no more load growth, and every new connection, every new appliance added in northern California would have to have newly installed capacity to serve it.

At about this time, the Southern California Edison Co., which had been supplying 100,000 kilowatts to the Pacific Gas & Electric Co. under contract and another 50,000 above contract, announced that it would cease to export after December. It was clear that real trouble lay ahead in 1948. The most optimistic completion schedule would add only 200,000 kilowatts of new capacity by August, while demand on New Year's Day indicated that growth would be at least 300,000 kilowatts.

At this point, the weather stepped in, and the power shortage which was expected in midsummer took place in early spring with a vengeance. Rainfall in December was slightly below normal; but in January there was no rain at all. Irrigation of vines and orchards began in the second week of January—4 months early—and by the middle of February, with still no rainfall to meet irrigation needs or to fill hydro reservoirs, a large part of the whole irrigation pumping load was on the line. This load, coming out of season and on top of the already tight situation, precipitated an almost immediate crisis in power supply. The first signal, again, was a frequency drop, slowing down the electric clocks. Throughout northern California, people showed up late for work and radio stations found their programs colliding with one another. For several days running, the "Lone Ranger" got off to a late start, so that even the small fry felt the pinch of the shortage. Before the company could announce that the situation was only temporary, demand had risen so enormously that switches were being pulled in rural areas. The clocks ran slow for weeks.

The switchpulling—which is, of course, the last and most desperate recourse in power-supply failure—is a particularly neat trick in northern California. A momentary opening of the circuit serves to dump for several hours the most troublesome part of the load, the irrigation pumping. The pumps must be started again by hand, and in many cases they are located far from the house. Often the farmers didn't even know, until later, that the pumps had not been working, yet city customers experienced no more than a flicker in their service.

There had been no preparation of any kind for the emergency. The power company had steadfastly denied that acute shortage was impending until the very moment it started to pull switches, and the utilities commission had taken no steps to prepare either the public or the industry for what was to come, even though labor and public-power groups had called for emergency measures the previous August.

The situation was one of chaos in the first weeks of February and it had improved to nothing better than confusion by the time the rains came in April. Curtailment was necessary, and the authority to effect it had to be improvised. Orders were superseded almost as rapidly as they were disseminated. Something close to panic spread among farmers who either had to pump water or be dehydrated out of business, and they bought thousands of diesel generating plants in March and April—costly equipment which was needed only for a few

days or weeks. Nobody advised them against this investment because nobody knew what the future held.

An appeal from the power company for voluntary conservation brought some public response. More aid came when the California Legislature imposed statewide daylight-saving time. Retail shops browned out voluntarily and wholeheartedly, but entertainment establishments remained recalcitrant even after the utilities commission ordered a mandatory 10-percent reduction in all electric use. A rotation plan for agricultural pumping was established. Everybody protested. Dairymen pointed out that you couldn't let every 10th cow go unmilked; farmers said that when it was hot they had to irrigate to keep the soil from drying out whether it was "their day" or not; food-locker men resented the idea that their goods would keep at a temperature only nine-tenths of freezing.

I think the following excerpts from a San Francisco Chronicle story reporting a meeting of manufacturers, farmers, retailers, and labor representatives with the State utilities commission will convey to you the kind of backbiting confusion which took place. I quote:

"Some 500 persons jammed the supervisors' chambers in the city hall * * *. With few exceptions, all sought some modification of present orders * * *. Many asked for exemption, entirely, of some section of business or industry * * *. Manufacturers and processors, cold storage and farming interests, irrigation districts and shippers told the commission why their use of power should not be cut * * *. Lloyd Taylor * * * of the Market Street Association read a statement explaining why the brownout was a real disaster for downtown merchants and theaters. But Karl M. Stull, representing the San Francisco Retail Dry Goods Association, rose and remarked: 'I am speaking for * * * the city's 13 major department stores * * *. We do not subscribe to Mr. Taylor's statement. We believe our window lights should be out for the benefit of those who need the power more.' * * * Edwin Fleischman, consulting engineer, spoke for the manufacturer's association and said that a canvass of more than 300 members resulted in a widespread difference of opinion concerning the best means of enforcing a 20 percent curtailment."

I should point out that this meeting took place and this kind of fumbling was going on over 2 months after the acute shortage first struck.

In mid-March, with the situation deteriorating daily, the commission appointed an emergency administrator whose apparent job was to become the most hated man in California. He promptly ordered a 20 percent mandatory curtailment, with disconnection of service the penalty for noncompliance.

Then fortune began to smile. The Bureau of Reclamation stepped up the secondary energy allotment from Hoover Dam, so that southern California, instead of withdrawing its export power as scheduled, was able to come to the rescue with a round-the-clock delivery of 200,000 kilowatts. Half of this came from Hoover, half from the city of Los Angeles. Shasta, which had been storing against prolonged drought and so had a very high head, delivered over 250 percent of its contract commitments to the company in the 4 months of the crisis—377 million kilowatt-hours instead of the 150 million required by contract.

Normally the irrigation season begins in April. But this year the rains began then, setting records for precipitation to match the record drought of January, February, and March. The pumping demand fell off; reservoirs began to fill; the power was flowing up from southern California; and daylight saving was to remain in effect until September. The public, which had never been informed as to the basic lack of installed capacity, could not understand the continued strict curtailment. The power administrator explained on April 7 that while the reservoirs were filling, they might have to be kept full for the following year since scheduled new capacity would be delayed because the coal strike, then in progress, would hold up production of new equipment. Still, the true nature of the shortage was kept from the public. But others were anxious for the curtailments to be lifted, even if it meant a risk. The House Subcommittee on Interior Department Appropriations was at that time holding closed sessions, with the president of the utility company testifying that Government power should not be allowed to solicit customers "already adequately served by existing private capital." It was important to him that the customers consider themselves "adequately served." Five days after the emergency administrator had explained in detail why the restrictions could not be lifted, he lifted them—on a temporary basis. New connections had to be screened still, but the 20 percent curtailment was rescinded. Effec-

tive May 1, this temporary relaxation was made permanent, and screening for new connections was officially abolished. As late as June 17, however, an item in a San Joaquin Valley paper tells of a new planing mill ready to go into operation but delayed because the power had not been connected, while one candid district manager of the company recently spoke of a backlog of irrigation pumping orders totaling several thousand kilowatts. Power shortage in northern California is by no means over, and in many ways the situation today is more interesting than during the dramatic months of acute shortage. But before describing present conditions, I would like to summarize the crisis experience and perhaps draw a few lessons from it.

Our emergency was a shortage not solely of peaking capacity but of kilowatt-hours as well, and curtailment was as important at off-peak periods as on-peak. This is most clearly shown by the fact that, since winter conditions still prevailed, the daily peak was in the evening; yet the load which precipitated the crisis was a daytime load, peaking before noon. Simply to cut down the evening peak was not enough; curtailment had to be straight across the board. It is generally thought that the handling of a power crisis is on two levels—the operational and the public relations levels. But with us, since curtailment had to be general, the problem was almost entirely one of educating and soliciting cooperation from the public. This job was shamefully bungled. Politics played hob with honesty, even in the midst of crisis. The public had been lulled by false assurances and was entirely unprepared to assist in a curtailment plan. Worse, no plan existed. No attempt at honest education was made. The only possible solution in the confusion was the appointment of a so-called power czar, a one-man dictatorship over electric use who had to do by decree what is by its very nature a cooperative job. Here you will not make those mistakes, because you will not have to.

I think the very agenda of this meeting indicates that here in the Northwest you will fare better. I note particularly the panel discussion of this afternoon in which representatives from Seattle, Eugene, and Tacoma will discuss their plans for meeting the shortage. I cannot emphasize too strongly, however, that while having a plan is a notable improvement over the California situation, it is not enough to have a plan. You must take the plan to the public, explain as clearly as possible why there is a shortage and why it is to the best interest of every individual to cooperate. Your problem here, of course, is essentially a peaking problem—apart, that is, from the necessary restrictions on new connections—and I think your public can assist even more readily than ours in California, provided it is an informed, intelligent public. With wide-scale staggering of domestic and commercial peak use, your industrial curtailments can in some measure be reduced. Once voluntary curtailment becomes a community enterprise, you will be surprised at the degree of cooperation on the part of business. Even in our befuddled experience, the shops were quick to make advertising capital of their brownout, putting little signs in the dim windows to tell of their self-sacrifice for the good of the community. And the very process of community participation, at the same time as it relieves the emergency, can turn the emergency to long-term account by educating all the people to the needs of their area. Even in California where every device of propaganda and misrepresentation was employed to turn the wrath of an uninformed public from the utility company to the Bureau of Reclamation (we were accused of "withholding power" at Shasta), even there a realization came to the people that more CVP capacity was needed. Here, where no fundamental disagreement exists regarding the area's needs or the program required to meet them, your power shortage can produce at least one happy result: a Northwest united to a man and vocal in support of your power program.

I would like to be able to report to this meeting on the effects of curtailment, since your shortage, like ours, strikes at a very strategic moment in the postwar development of the area. The Northwest has emerged as a major production area; California had just begun to emerge as the Nation's second market area, and a great commercial and processing development was underway. Unfortunately, it is not possible yet to determine even the short-range effect of the emergency. Our estimate at this time is that a great deal of load has been lost for good. New houses which were wired for ranges and water heaters were equipped with gas appliances instead, and the farmers who bought diesel pumps now find operating costs cheaper with diesel, once having written the investment off as a loss. The refusal of new connections is certainly the saddest kind of curtailment, and I know that you will do what you can to reduce the necessity for it.

Commercial applicants, and some industrials, will wait; householders cannot wait very long and a refusal of their business is a permanent loss.

At the present time, when supposedly all controls have been removed, our load growth over last year is, so far, considerably less than 100,000 kilowatts, whereas it could have been at least 300,000, given sufficient capacity. But the power shortage is not over in our area. We would have curtailment right now if it were not for the availability of 200,000 kilowatts of southern California power and the continuance of daylight time. After October, the import power will be withdrawn in order to meet the winter peak of the city of Los Angeles and the Edison Co. system. Unless precipitation is well above normal, northern California will have an energy shortage in November and December. By then, daylight time will represent a saving in peaking capacity of something like 150,000 kilowatts, and it must absolutely be retained. We will know a bit more about the effect of the curtailment at that time: if the load is going to recover, we will have a higher December peak than we had in August (reversing our normal situation). But, ironically, we will again be short at that time and may have to curtail once more, so that we may never know what the peak might have been.

Power supply in northern California will remain tight perhaps until 1951, and even then something less than adequate reserves will exist. But a much more disturbing factor than shortage is the emergence, on a permanent basis, of steam generation as the major source of our area supply. I cannot overemphasize the importance of this development, which must have a profound effect on our own economy and on whatever relationships apply between the Northwest and our area. We have not simply run out of power; we are running out of power resources, and after there is no longer a shortage of electric energy there will continue to be a shortage of the wherewithal to produce it economically. I hope you will forgive me if I take a few minutes to discuss this more basic power shortage in California.

Our area has always relied on hydro for about 70 percent of its installed capacity and, on an average, for over 85 percent of its annual generation. At this time, however, hydro capacity is down to 60 percent of total, and in 1947 hydro generation provided only 55 percent of the energy consumed. It is a mistake to assume that this high steam generation is a symptom of power shortage, for now that the utility company's postwar construction program is announced, it appears that the new hydro installation will not even be adequate to absorb growth which has already taken place, let alone subsequent growth. Through 1951, the company plans to install about 1,300,000 kilowatts of new plant, of which no less than 1 million kilowatts will be in steam capacity. Between 1941 and 1951, demand on the company system will have risen by at least 1,200,000 kilowatts, but in that same period only 300,000 kilowatts of new hydro will be installed. And by 1951 the company's plant will be 56 percent in steam, in steam of the traditional 30 percent. A company executive the other day estimated that if 1952 were a dry year (he did not say how dry it would have to be), the company would have to burn about 25 million barrels of oil. By our calculation that would represent over 70 percent of total annual generation.

I expect you are wondering why this is happening, and perhaps you wonder why we consider it bad. It's happening simply because the hydro sites which remain available to the company are not desirable; the few which are desirable from the 300,000 kilowatts of hydro which the company has scheduled. Energy yield from the remainder is so low that they could feasibly be undertaken only in a period of very low construction costs.

In one respect, of course, the hydropotential of the area has been barely tapped—that is, the large-reservoir, multipurpose development of which Shasta is to date the only example and which can be undertaken only with public money. The water needs of the area are at least as great as its power needs, and sites which might earlier have been considered single-purpose hydro sites must now make a major contribution to irrigation supply. As a result, they must be built on a larger scale than the power yield alone could ever justify. To date, only the Shasta-Keswick capacity of 450,000 kilowatts, among the hydroprojects of the Central Valley project, has received congressional authorization. But our program for the CVP calls for an ultimate total of 1,375,000 kilowatts of project hydro. For independent operation, we would require 500,000 kilowatts of steam to firm this capacity. This would put the completed project system on a steam component of about 27 percent of total capacity, or actually less than the area's traditional steam requirement.

Thus, given congressional approval, the CVP will provide a compensating factor to the company's trend toward steam. It is worth noting, however, that the CVP will provide the competitive advantage of a public-power system which is low cost on an operational as well as a policy basis only if we are provided with the transmission and the firming capacity necessary for independent operation. If merely added to the area capacity—or, bluntly, to the Pacific Gas & Electric capacity—the CVP hydro will not be sufficient to reverse the trend, or even to affect it significantly. For example, as we have seen the company's system will comprise 56 percent steam by the end of 1951; adding in the CVP capacity installed by that date lowers this figure only to 51 percent, which is still almost double that traditional to the economy.

That is the meaning of steam, or part of its meaning. Steam generation in northern California also means the burning of fuel oil. Coal at feasible cost has never been available to the area, and there is no prospect of its being so in the future. Natural gas, once abundant and low cost, must now be imported from Texas. Oil, as I think you all know, is no longer either low cost or abundant. Within a few years, California will have to import oil for her own needs; and the world shortage will certainly keep the price up. Oil which in 1942 sold for $1 per barrel delivered now sells for $2.43, if you can get it. It will shortly go above $2.50 and is expected to remain there. Gentlemen, at 500 kilowatt-hours per barrel, which is better than average yield, the fuel cost alone of steam generation will exceed 5 mills per kilowatt-hour. For a moment, I would like to hark back to the "chain reaction" which occurred in August of 1947 when the power company had to invoke its interruptible contracts with the chemical plants of the bay area. Those plants were just getting by on secondary energy sold them on an interruptible basis at 2.57 mills.

Here, then, is an absolutely indispensable industry whose power requirement is for energy costing less than half the very operating cost of steam generation. And whereas the industry has to date received this energy on a dump power basis, dump power will have ceased to exist on the company system as soon as steam generation equals hydro generation, as it will in the next few years.

The chemical industry is merely an extreme case of the outlook which faces the entire northern California area. That outlook reverses the public-power formula for area well-being which runs: "abundant power at progressively lower cost." Down there, the future holds progressively less power at mounting cost. Unalleviated, this must mean to us a restriction of opportunity. It has already meant that. As to what it means to you in the Northwest, I don't think I need to spell out for anybody here the economic unity of the Pacific coast. Surely, all of the West stands together in its unequal struggle for economic independence and self-determination; but we of the coast are even more tightly linked, as a cohesive market, as a defense area, by the similarities of our commerce and the reciprocal aspects of our production. Our California fruit industry does not prosper at the expense of yours, but only as yours prospers also. And failure to any of us means that the bell tolls for us all. Your power shortage has brought home to everybody the large and immediate need for further development of your vast hydro resources. Our power shortage has brought us sharply to a realization we might otherwise not have reached for many years—the inadequacy of our resources themselves.

I have already spoken of the possible alleviating effect of the CVP hydro-program. At this point, I will make no guesses as to the success of that program in the near future, but there is a more immediate possibility for alleviation of our problem, one about which you have heard some talk and will doubtless hear more in the future: interconnection of the Bonneville Power Administration and Central Valley project systems. Now, I've already used up most of my time, and I don't propose to launch into any detailed statement of this proposal. I do, however, want to make five brief and basic statements about it, in order to clear the record as to our position.

(1) Simply by the process of their scheduled development, the two systems would eventually be virtually interconnected in any ease. The BPA is programed to extend to Ashland, Oreg.; the CVP to boundary substation, about 12 miles from Ashland. Instead of waiting 20 years to realize the advantages of linking the two, the proposal is simply to effect this interconnection now, by closing a gap of 215 miles rather than the eventual 12 miles.

(2) These advantages are very extensive and they apply to both systems. They may be briefly summarized as four kinds of benefits: first, an increase in the dependable capacity of both power systems, resulting in considerable annual

revenues; second, emergency backup for both systems to the full capacity of the intertie, eliminating the necessity for construction of separate backup facilities; third, the marketing of waste energy from the BPA which cannot be utilized within BPA's service area, with a consequent reduction of steam generation in the CVP area; and fourth, a strengthening of transmission facilities between the two areas long recommended by the Federal Power Commission and considered vital to coastal defense by military authorities. The third of these is the most direct function of the undertaking and would account for the most extensive benefits. Even at the present time, while a critical kilowatt shortage exists on the BPA system, waste energy inevitably occurs in the amount of about 1½ billion kilowatt-hours per year. Importation into the CVP area of this otherwise unused energy would retire an average 1 billion kilowatt-hours of steam generation per year, which represents an annual saving of at least 2 million barrels of fuel oil. The effect of this would be a saving in the cost of energy; an increase in the output of our hydroplant through substitution of waste for off-peak hydro production; a distinct contribution to the conservation of fuel oil; and an improvment in the basic feasibility of the very necessary Central Valley project (the repayment schedule for which was predicated on oil at $1 a barrel).

(3) The interconnection proposal does not contemplate exportation from either area of anything which that area wants or can use. My definition for waste is "energy which can be produced at idle plant for which water is available and wasting downstream," and I assure you that nothing but waste energy would be sent over the intertie. As you all know, your period of peak demand comes in midwinter, when plant capability on the BPA system is lowest; and on the other hand, in midsummer, when plant capability is highest, demand is at the lowest. This means that waste is inevitable on the system, since you can change neither the runoff characteristic of your streams nor the fundamental character of your load. Our system, however, has its heaviest runoff in midwinter, when you need the most power and have least; but our peak demand occurs in midsummer, when your waste occurs. In short, the electrical economies, in hydrology and in pattern of consumption, are remarkably reciprocal. We can use your unwanted waste hydro; by using our idle standby steam, you may preclude the need for building steam of your own, a need you may otherwise face before long.

And finally (4): On a basis of minimum expected waste and minimum conditions for utilizing it, the interconnection project will return more than twice its annual charges in revenues from sale of the waste alone, neglecting entirely the numerous monetary and conservation benefits which will also accrue.

Don't misunderstand me. I am not saying that interconnection will entirely make up for our hydro deficiency, or that your kilowatt problem will disappear. But it will help, significantly, and by helping us in our really primary and enduring shortage, a shortage of the power resource, the Northwest will be helping itself. We are for the BPA-CVP interconnection for the same reason that we're for our own program, or for public power programs in general: because it represents the utilization in a stimulating, wealth-producing way, of available but wasting resources—in this case, resources already developed. In short, we are for it because there's nothing to lose, and very much to gain.

EXHIBIT No. 8

[From Electrical World, Jan. 4, 1954]

FPC REPORT FINDS CALIFORNIA-OREGON TIE FEASIBLE

The Federal Power Commission has reached the conclusion that the controversial interconnection between California and the Pacific Northwest is "feasible from engineering and economic standpoints."

In brief, these are the conclusions drawn from the commission's study:

(1) Assuming only one 230-kilovolt tie line, power shortages now anticipated for the Pacific Northwest in 1954–57 could be eliminated except for winter of 1954–55 and September 1955. During these times shortages would be greatly reduced. If two lines are built, most of expected energy deficits would be made up.

(2) Surplus hydroelectric energy from Pacific Northwest could be delivered to California load centers to replace steam-electric generation, with a significant saving in fuel.

(3) Prior to the time when 6-7 million kilowatts of steam generation is installed in Northwest, surplus offpeak steampower from California could be used to firm up secondary energy in the area.

(4) The California-Pacific Northwest interconnection would have lesser advantages in common to all ties between large systems.

Four suppliers worked with FPC.—The new study was undertaken at the request of Depa in May 1952 to determine the value of proposed intertie to national defense. It was an outgrowth of initial study made by FPC in 1950. Three steps comprised this latest look at interconnection: Load and resource analysis of both areas for the period July 1954 through June 1957; determination of loading of proposed lines; and detailed economic analysis to establish long-term economic feasibility of interconnection. Participating in study with FPC were BPA, Bureau of Reclamation, Pacific Gas & Electric Co., and California Oregon Power Co.

In selecting routes for the proposed transmission lines, cognizance was taken of 230-kilovolt lines already built or proposed by participating utilities. During the study, BPA completed a 230-kilovolt line from its main system to Redmond, Oregon. Extension of this line will be carried on by Copco to Klamath Falls, Oreg. (Electric World, July 6, 1953, p. 18). Because the Redmond-Klamath Falls line will have considerable surplus capacity during early years of its operation, FPC felt that Klamath Falls would be the logical northern terminal for one tie with California. Three different proposals for the southern terminal of the line include Shasta plant of Reclamation's Central Valley project, P. G. & E.'s Cottonwood substation, and its Pit No. 3 hydroplant.

Northern terminal for the second 230-kilovolt tie would probably be at Roseburg, Oreg., southern end of a line proposed by BPA and to be completed in 1957. Second tie would extend south to Medford, Oreg., loop into Shasta plant and terminate at Cottonwood substation, a distance of about 245 miles. In estimating costs of proposed lines, it was assumed that wood-pole, H-frame construction, and 795,000 cir mil ACSR conductor would be used. Series capacitors to provide 35 percent compensation and tieline control equipment are included in costs.

Two areas complement each other.—Here is the way FPC approached the proposed interconnection. Pacific Northwest has essentially a hydrosystem which possesses large amounts of secondary energy, except in low flow years, because of great annual variation in stream flows. In California P. G. & E.'s system consists of a high percentage of steam-electric capacity. Ratio this year reached 62 percent steam and 38 percent hydrocapacity. FPC feels there would be considerable offpeak steam energy available.

Because of these differences, the two systems tend to complement each other. And, says the Commission, strong interconnection would result in substantial benefits to both regions. During the first 25 years of operation it is estimated that an annual average of 400 million kilowatt-hour of otherwise wasted hydroenergy in the Pacific Northwest could be delivered to California if one 230-kilovolt line is built. Second line would up potential delivery to 940 million kilowatt-hour. Estimated line losses would be 20 percent of energy delivered to southern terminals of the lines.

Transmission of these amounts of energy is based on reduction of 35 Mw. of maximum power capability of lines to allow margin for power swings. Margin was allowed by the commission for safe operation regardless of whether one or both lines are built. With credit to existing ties between P.G. & E. and Copco of 50-Mw. power interchange in either direction, a total of 85 Mw. onpeak and 115 Mw. offpeak could be sent south over one 230-kilovolt tie. Power flow north over one line would be 75 Mw. onpeak and 155-Mw. offpeak maximum. With addition of a second line, power flow south for safe operation would be 230 Mw. onpeak and 285 Mw. offpeak. And in the other direction, power could be transmitted at 235 Mw. onpeak and 395 Mw. offpeak.

It was further estimated that existing transmission lines to load centers in San Francisco Bay area will have sufficient surplus capacity through June 1957 to transfer all energy delivered over one or two 230-kilovolt ties. Beyond this time additional generating facilities in Pit-McCloud Rivers area would load up existing lines to bay area. Calculations based on streamflow records and hydraulic characteristics of existing plants indicated that long-term average deliveries

over one 230-kilovolt tie should be reduced 12.6 percent and over two tie lines 21 percent. With an additional 20 percent to cover losses, it was estimated that one 230-kilovolt line could introduce 280 million kilowatt-hours annually and two lines 594 million kilowatt-hours to California load centers.

Two lines save $16.9 million.—Incremental costs saved by utilizing this energy to replace steam generation were estimated at 3 mills per kilowatt-hour. Average annual savings due to steam replacement would be $796,880 for the first line and $893,640 for the second. These savings include allowances for incremental costs of hydro.

Interconnection would make it possible to firm up some Pacific Northwest secondary energy by using offpeak steam energy.

Commission reports one 230-kilovolt line would firm up 58 Mw. of secondary energy during its first 25 years of operation. Two lines would increase the amount of firmed-up secondary energy to about 158 Mw. Value of this firm capacity was determined by taking difference between cost of using offpeak steam from California and cost of firming Northwest hydro by construction of steam-electric plants in the area. Average annual values of energy were estimated to be $376,000 for the first line and $648,300 additional for the second.

Total evaluated benefits and cost of proposed interconnections taken together show benefits exceed cost by appreciable amounts in all cases. Assuming interconnection would loop into Shasta plant and terminate at Cottonwood substation, these are ratios of benefits to cost:

Number of 230-kilovolt lines	Method of financing	
	Private	Federal
1	1.38/1	2.44/1
2	1.27/1	2.29/1

STUDY TOO CONSERVATIVE SAYS—

Bonneville Power Administration

FPC's report has evaluated benefits quite conservatively. Even so, interconnection appears well justified. Estimate that 35-Mw. margin in the tieline loading is needed to allow for normal power swings appears somewhat high. With best tieline control equipment available at present, 25-Mw. margin would be satisfactory. Report shows 15 percent deduction for losses for power flowing north. Analysis of system conditions indicates there would be no positive net losses for this condition; rather, they would be negative. Importation of power from California would thus tend to reverse direction of power flow and would therefore decrease losses.

Bureau of Reclamation

Study supports recommendation that the Bureau of Reclamation build 230-kilovolt tie between Shasta plant and a 230-kilovolt extension from BPA's system to Klamath Falls. Cost would be $1,114,000 less than for the longer line to P.G. & E.'s Cottonwood substation. No additional benefits would result from longer line. Capacity of existing lines south of Shasta is sufficient to transmit all fuel-replacement energy contemplated for interconnection, plus maximum power capability of Shasta and Keswick plants. For power flow north, capacity of these lines to transmit firm power is greater than power contemplated for interconnection. Termination of 230-kilovolt tie at Shasta would improve flexibility of oepration of the interconnection above other terminals considered.

Principal items in study were handled in such unduly conservative manner that only a portion of benefits are brought out, others include:

1. Deduction of 50 Mw. for existing ties is applied improperly. Increase in power that could be transferred over existing ties when 230-kilovolt tie is built should be credited to interconnection.

2. Assumption of 50-Mw. capacity for existing ties is too great. More realistic allowance on this item would further bring out advantages of intertie in relieving power shortages in Northwest.

3. Application of transient stability criteria to line exclusively loaded for energy interchange is not supportable. Operation at capacities very close to

steady state stability limit would increase computed benefits another 10 to 17 percent.

4. Allowance of 35 Mw. for power swings is too large. With proper application of available equipment, swings of 15-Mw. overall might be expected.

5. All surplus energy available has not been credited. If energy available less than 37 percent of time is included, estimated 280 million kilowatt-hours to be delivered annually to California load centers might possibly be increased by 25 percent.

6. Value of emergency steam energy imported into Northwest is not reflected in benefit-cost ratios. Many additional advantages of intertie are not represented in numerical ratios.

7. Value of surplus hydroenergy for steam replacement taken as 3 mills is too small. Adjustment of value to 3.315 mills adds 10 percent to steam replacement benefit.

8. Actual and real worth of miscellaneous and contingent benefits is not adequately brought out.

REPORT OVERLY OPTIMISTIC SAYS—

Pacific Gas & Electric Co.

Steady State power limit of tie should have been determined for all operating conditions. Allowance for power swings should be not less than 50 Mw. and transient stability limits should be reduced by that amount in estimating capability of proposed lines.

Estimates of power transfers from Northwest to California are overly optimistic. They do not adequately recognize transmission and other limitations in California. It probably will be difficult, if not impossible, at times to absorb all available surplus hydroenergy in California during offpeak hours. Because 230-kilovolt line between Redmond and Klamath Falls will supply power to southern Oregon, amount of power estimated to be available for transfer to California should be reduced. Interconnection cannot be justified solely on grounds of meeting possible Northwest power shortages during period 1954–57. Assuming that new generation facilities are added as scheduled in Northwest, the report shows that after the winter of 1956–57 there would be no shortage, even of interruptible.

No sound basis exists for assuming that there would be financial benefit to Northwest from California steamplants used to firm up secondary energy. Data in report is interpreted to mean that cost of steampower generated in Northwest would be 7.5 mills per kilowatt-hour. Report assumes that California steampower could be delivered to Northwest for 6 mills. Based on existing interchange contracts, California steampower would show no saving over 7.5-mill steampower generated in Northwest. In fact, power delivered to Copco for transfer to north costs considerably more. Moreover, firming with steamplants in Northwest would provide better continuity of service.

Regarding disposal of surplus hydroenergy to replace steam generation in California, unless substantial benefits are presented, there would be no incentive for BPA to dispose of or for California utilities to receive surplus power. Reasonable assurance of availability of such power is necessary over long period to justify any substantial expenditures for its disposal in California. No negotiations have been started, nor have any been proposed, between parties who would make available and receive surplus power. Practical possibility of interconnection would be entirely dependent upon the outcome of any such negotiations.

California Oregon Power Co.

Proposed interconnection between Klamath Falls and Cottonwood substation would require that Copco system be sectionalized or run risk of imposing serious overloads on existing transmission lines. Sectionalized system would adversely affect Copco's ability to dispose of offpeak surplus power. Construction of 230-kilovolt backbone system is planned by Copco, with certain planned or indicated extensions by BPA north and P.G. & E. south. These lines will provide sufficient interchange capacity to transfer between California and Northwest capacity and energy indicated as available by a.c. board studies made for the report.

EXHIBIT No. 9

SENATE APPROPRIATIONS COMMITTEE ADOPTS INTERCONNECTION PRINCIPLE

The Committee on Appropriations, U.S. Senate, in its Report No. 609, 85th Congress, 1st session, July 12, 1957, pages 38–39, in approving two new transmission lines for construction by the Bonneville Power Administration gave recognition to the "interchange and interconnection" policy of the Bonneville Act. The committee report reads as follows (pp. 38–39):

* * * * * * *

"The increase of $2,159,000 over the House allowance is for the following facilities:

(*a*) Rocky Ford-Tacoma transmission facility	$1,863,000
(*b*) Chief Joseph-Valley transmission facility (planning)	296,000

"The Rocky Ford-Tacoma facility will integrate the Priest Rapids hydroelectric plant of the Grant County Public Utilities District with the Bonneville system, and will provide part of the additional capacity required for wheeling Priest Rapids power. The total estimated cost of the facility is $8,594,000.

"The Chief Joseph-Valley facility will integrate the Chief Joseph project and the Rocky Reach plant of the Chelan County Public Utility District. The total estimated cost of this facility is $14,910,000. The amount recommended—$296,000—is for planning and surveys.

"Statutory authority for the construction of these facilities is found in section 2(b) of the Bonneville Project Act (50 Stat. 731). The provision reads:

"'* * * The Administrator is authorized and directed to provide, construct, operate, maintain, and improve such electric transmission lines and substations, * * * for transmitting electric energy, * * * and, for the purpose of interchange of electric energy, to interconnect the Bonneville project with other Federal projects and publicly owned power systems now or hereafter constructed.'

"Section 2 of the Priest Rapids Act (Public Law 554, 83d Cong.) directs that the Priest Rapids development be integrated with the Federal development as part of the comprehensive plan.

"The wheeling principle referred to in the House committee report is actually accomplished through interconnection, interchange, and displacement of power on the Bonneville system—the backbone grid of the Northwest power pool—which presently interconnects the 139 generating plants, public and private, in the Pacific Northwest.

"The committee recognizes the necessity for and the advantages of the pooling and wheeling of power in fulfillment of the interchange and interconnection requirements of the Bonneville Project Act, and as an incident to Bonneville's power sales arrangements with its generating-utility customers."

Senator KUCHEL. Thank you, Mr. Cleaveland.

Mr. Pearson, will you state for the record what the position of the Governor of your State is and whether it coincides with the position taken by the representative of the Governor of California?

STATEMENT OF FRANCIS L. PEARSON, CHAIRMAN, WASHINGTON STATE PUBLIC SERVICE COMMISSION

Mr. PEARSON. Mr. Chairman and members of the committee, I believe that there is a little confusion between the members of the Governor's committees and their actions because of the newness of this proposal.

The intertie proposal came up only a few months ago. There have only been two meetings of the Governors' committees. I would like to point out what our feeling in the State of Washington is and what conclusions we as the committee from the Governors have so far come to.

1. As far as Governor Rossellini is concerned, his first interest, of course, like the Governor of any State should be, is to protect the

people of his State and their interest. He realizes that we are going to have power available, dump power available, to sell to some purchaser who can afford to pay the price for it, at whatever their market might be.

Now, the details of these things we don't know as yet. And from the testimony I have here heard the last 2 days I am sure it is doubtful in a lot of places.

Of course as you know, we have certain arrangements that we are trying to make with British Columbia in order to have them construct large power and storage dams in Canada, both in the Peace River and on the Columbia River, that will add to the Northwest power pool that will make additional power available.

Now just because this storage in 10 years might firm what power we have, doesn't mean that there isn't going to still be a lot of power available that the Northwest can't use at that time. I haven't seen any studies, at least, to the contrary.

We also have private agencies in the State of Washington that are constructing new dams that now and in the very near future are going to go on the lines. Some of our public utility districts are constructing dams that are soon going to go on the lines. And this could be marketed through our Northwest power pool and through Bonneville to make additional power available. So that it could be marketed in any place, as I say, that could afford to pay for it.

We have further negotiations going on with Canada as far as our natural gas is concerned. And you in California have the same situation going on through P.G. & E. line that might be extended down there. All of the natural gas used in Oregon, Washington, and portions of Idaho presently is gas that is coming out of the Peace River country; furnished by West Coast of Canada to their Pacific Northwest, who in turn are now before the Federal Power Commission on a merger with El Paso, whom I understand has a captive market in California to deliver a lot of the gas down there.

So, your interests are not only with power, as far as British Columbia is concerned; but your interest is with gas, too.

And I don't think that anything should be done in this hearing or in actions to be taken that British Columbia cannot be apprized of and be shown that it is going to be to their benefit also to carry this thing on.

The Governors committee had a meeting first in Salem which I didn't attend because I was at one of the national meetings here in Washington at the time.

But I did attend a meeting last Friday in Sacramento. There we discussed the matter of this three-State study.

And that is the proposal that is going on presently.

In our meeting, Mr. Banks, of the State water resources board in California, is supposed to be finding out how much power the State of California will need, in both their public and private agencies, and how much they can afford to pay for it at the border.

That is now No. 1.

2. Mr. Coe is supposed to get together with the Bonneville people and our Northwest power people, because he heads the Washington State Department of Conservation to see about how much power might be available by all sources in the Northwest to be marketed and what price it probably would take or cost to market that.

Then when this information is available, we will see whether we have the meeting of minds or not. We don't know to date whether the people of California can pay the price that they are going to have to pay in order to wheel that power down there. And we in the Northwest are certainly not going to feel that we should pay for wheeling charges to get power down to California.

I am sure that Governor Brown doesn't figure that either.

In talking to Senator Jackson yesterday—and I might add that Governor Rossellini feels that he is quite capably represented with his views as far as Senator Jackson's representation on this committee is concerned. I know that we have no worries there.

3. Governor Rossellini does not want to be placed in any position where anything that he might do is going to cause an increase in rates as far as California—or as far as Bonneville is concerned.

However, I am afraid personally—I am a little more practical. And I, being in the rate regulating business, find that it is awfully hard for me to believe that rates that were established back in the 1930's can go on forever in these days of inflation.

The private power companies, your telephone companies, your gas companies, all the people who regulate, have found it is necessary to increase rates to meet new expanding costs.

Now, this is the concluding statement I want to make.

That Governor Rossellini would like to make available to a sister State of California all the power possible, all the power that we can possibly give to them down there that we cannot use ourselves.

But in no way do we want to establish any kind of a system or a line or a program where customers in California are going to receive the same preference that preferential customers in the Northwest receive.

And I think that Governor Brown in his statement has very definitely stated that he does not choose to do that either. And as long as that is an understanding, as long as we can do that, I think that we can all see eye to eye on this thing.

And in talking with Senator Jackson and some of our public agencies here yesterday, I would like to make this recommendation to the committee for what it is worth.

And that is this: that your committee pass a resolution to have a study made by whatever agency you might feel is proper to make that study; that the Governors of the three States be allowed to participate in that study to the extent of at least determining whatever fields that they might like to have examined; and that after this study has been accomplished and made, that then maybe the three States would find it necessary to hire a consultant to go over the figures, to come back with the economic impact that it might have on the various one of the three Western States.

Now that is a recommendation. I am sure that you will come up with some facts and some figures and some information so they can proceed with an orderly development of the surplus power that is available in the Northwest at this time.

And if we can do that, I am sure that all three States will benefit. I think that is all I have, Mr. Chairman.

Senator KUCHEL. Thank you very much, sir. I appreciate your coming, Mr. Pearson, and making your contribution to the record.

Is there anyone else in the room who desires to testify?
(No response.)

Senator KUCHEL. Let me take advantage of an opportunity to speak to the Bonneville Administrator for a moment, Dr. Pearl.

Dr. Pearl, this committee will meet shortly. Are you able to express yourself informally as to what impact this hearing may have on your feelings with respect to the negotiation of this contract?

Dr. PEARL. We have never been opposed to this study that you have discussed here during this meeting, nor to any other investigation of anything we are doing at Bonneville. And in all of our activities we make a great effort to publicize them before we make any commitments.

I again want to repeat that we publicized this in the Northwest last November, that we were contemplating this. And we will be very much interested in what this committee comes up with as a result of this hearing.

Senator KUCHEL. Do you contemplate so far as you are concerned going forward with the negotiation and execution of a contract such as we have before us in this connection now?

Dr. PEARL. No, I don't think we should until we hear from this committee. I am assuming that you are going to proceed.

Senator KUCHEL. Let us assume that this committee which, it is fairly reasonable to assume, would give consideration to the requests of the governments of the three Pacific Coast States that negotiations cease until their own studies proceed which will take apparently in the opinion of the representative of the chief executive of California some 6 months; would you believe if such a request were made to you by this committee that the Bonneville Administrator should accede to it.

Dr. PEARL. Yes, I believe he should. We are interested in that which is in the best interest of the people of the west coast.

And I don't believe that we should proceed with this if such a study is going to be made and going to be completed in that short a period of time.

Senator ENGLE. Will you yield there?

Senator KUCHEL. Yes.

Senator ENGLE. I assume that you would take that position. Now, if the Secretary of Interior bangs you over the head and tells you to go ahead anyway, what are you going to do?

Dr. PEARL. He is the boss.

Senator ENGLE. Well, maybe we had better talk to him.

Senator KUCHEL. I will say this, Dr. Pearl.

You are an able gentleman. But I have learned this in Washington. Two very fine able Senators, one the late Senator Milliken, a Republican, and the other the present Senator O'Mahoney, a Democrat, joined in sponsoring a number of years ago what I used to hear every day when I was a member of this committee in my first couple of years here was the O'Mahoney-Milliken amendment, or maybe the Milliken-O'Mahoney amendment.

Anyway, it was and is a part of the law by which a mandate on the Federal Government is laid down to contract the State governments before any legislative action is taken on public works legislation.

And I must say I think that is a good thing. I have used it as kind

of a guideline for myself. I like to—I am the representative of the State here. Senator Clair Engle and I represent California. We like to know what the State thinks about these problems.

We try to be guided. We are not engineers. We don't have an engineering staff. That goes regardless of the political complexion. I am assuming there are no political considerations involved in such a recommendation on public works. I may respectfully say that I think Senator Jackson is right.

I think it ought to be standard operating procedure for the government of the State to be contacted first in such problems as this. I say that most sincerely and most respectfully.

I think it is a good way to begin any negotiations.

Senator Engle, do you have any comments?

Senator ENGLE. No. It has been an excellent hearing. And I want to express my appreciation to the committee, to my colleague from California, and all those witnesses who have come here from great distances to testify.

Senator KUCHEL. This hearing is adjourned. Thank you all for coming.

(Whereupon, at 12:25 p.m., the committee was recessed.)

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